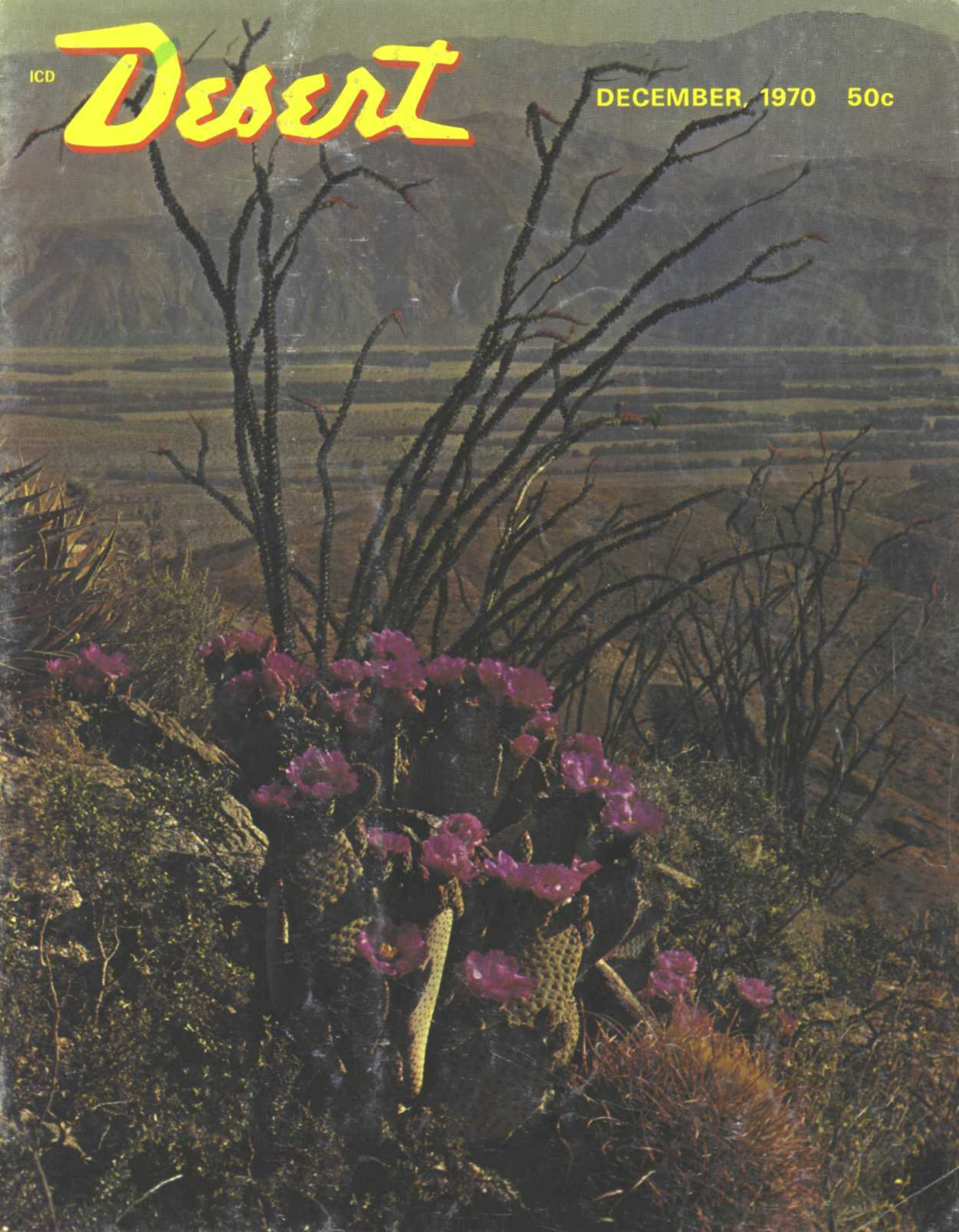


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DUTCH OVEN COOKBOOK by Don Holm. Wildlife editor of the Portland Oregonian, the author has spent his life exploring and writing about the outdoors, so his recipes for preparing food in a Dutch Oven come from experience. If you haven't had food cooked in a Dutch Oven, you haven't lived . . . and if you have you will find these recipes new and exciting culinary adventures—as well as his style of writing. Heavy paperback, 106 pages, \$3.95.

A TRAMP ACROSS THE CONTINENT by Charles Lummis. First published in 1892, this is a reprint of the personal experiences of the western historian who, in 1884, walked from Ohio to Los Angeles, covering 3507 miles in 143 days. Lummis writes in a matter-of-fact manner of adventures which make fascinating reading and give a keen insight into the people he encountered. This is a classic of Western Americana. Hardcover, 270 pages, \$8.50.

BAJA CALIFORNIA BY ROAD, AIRPLANE AND BOAT by Cliff Cross. Author of a popular travel guide to the mainland of Mexico, Cross has compiled a comprehensive book on Baja California. The new guide is well illustrated with detailed maps of the villages and bays along the 1000-mile route plus travel, history and fishing information. Large format, heavy paperback, 170 pages. \$3.50.

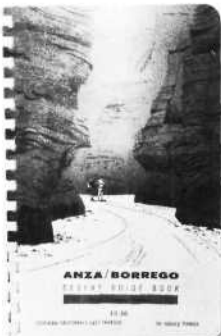
NEVADA GHOST TOWNS AND MINING CAMPS by Stanley W. Paher. Covering all of Nevada's 17 counties, Paher has documented 575 mining camps, many of which have been erased from the earth. The book contains the greatest and most complete collection of historic photographs of Nevada ever published. This, coupled with his excellent writing and map, creates a book of lasting value. Large 9x11 format, 700 photographs, hardcover, 492 pages, \$15.00.

INYO MONO JEEP TRAILS by Roger Mitchell. Author of DEATH VALLEY JEEP TRAILS, veteran explorer Mitchell takes you on 18 different 4-wheel-drive trips into the Sierra Nevada Mountains, where he explores ghost towns, Indian territory and scenic canyons and mountain passes. Paperback, 36 pages, illust., \$1.00.

LOST LEGENDS OF THE WEST by Brad Williams and Choral Pepper. The authors examine the "lore, legends, characters and myths that grew out of the Old West" in a sequel to their popular first book, *The Mysterious West*. Included among the more than 20 "lost legends" are such intriguing subjects as lost bones, lost ladies, lost towns, and lost diamonds. Hardcover, illustrated, 192 pages, \$5.95.

GOLD MINES OF CALIFORNIA by Jack R. Wagner. Illustrated history of the most productive mines of the Mother Lode country with descriptions and anecdotes about the people who owned the mines and the roles they played in the development of California. Profusely illustrated with rare photographs, the author has chronicled California's greatest and most exciting era. Large 9x11 format, 300 photos and maps, hardcover, 259 pages, 10.00.

ON DESERT TRAILS by Randall Henderson, founder and publisher of Desert Magazine for 23 years. One of the first good writers to reveal the beauty of the mysterious desert areas. Henderson's experiences, combined with his comments on the desert of yesterday and today, make this a MUST for those who really want to understand the desert. 375 pages, illustrated. Hardcover. \$6.95.



ANZA-BORREGO DESERT GUIDE

By HORACE PARKER

A comprehensive guide and history of the Anza-Borrego desert area by a man who has spent most of his life exploring the "last frontier" of Southern California. The book has two detailed and accurate maps and is profusely illustrated with both historic and current photographs. Excellent for traveling on paved highways or in back country 4-wheel-drive roads. Enlarged, third edition, 152 pages, heavy slick paper with spiral binding for easy reference.

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LOST MINES & BURIED TREASURES ALONG THE OLD FRONTIER by John D. Mitchell. The second of Mitchell's books on lost mines which was out-of-print for many years is available again. Many of these appeared in DESERT Magazine years ago and these issues are no longer available. New readers will want to read these. Contains the original map first published with the book and one pinpointing the areas of lost mines. Mitchell's personal research and investigation has gone into the book. Hardcover, 240 pages, \$7.50.

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LOST MINES OF THE GREAT SOUTHWEST by John D. Mitchell. The first of Mitchell's lost mine books is now available after having been out of print for years. Reproduced from the original copy and containing 54 articles based on accounts from people Mitchell interviewed. He spent his entire adult life investigating reports and legends of lost mines and treasures of the Southwest. Hardcover, illustrated, 175 pages, \$7.50.

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UNCLE SAM'S CAMELS, edited by Lewis Burt Lesley. This book is the actual journal of May Humphreys Stacey, a young man who was part of the "camel corps" under leadership of Lt. Edward Beale. First published in 1929 this is a fascinating account of attempts by the U.S. government to import camels from Asia to provide transportation across the deserts of the Southwest. Stacey later became a colonel in the U.S. Army. A good description of how the camels were purchased; and Beale's report to the Secretary of War. Hardcover, 298 pages, \$8.00.

GHOST TOWNS AND MINING CAMPS OF CALIFORNIA by Remi Nadeau. The only good, hardcover book on the California ghost towns. We recommend it highly. \$5.95.

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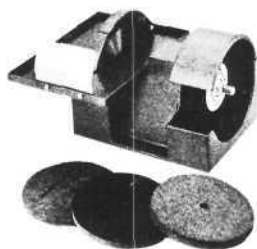
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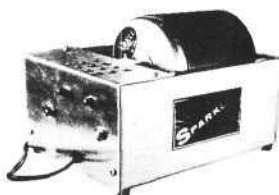
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A Peek in the Publisher's Poke

SUPPORTERS of conservation and animal lovers were shocked recently by the arrest of two persons in San Bernardino County for the possession of hides and skulls of the rare desert bighorn sheep.

These graceful creatures have been protected in California since 1872. The estimated population numbers 3,900 with a large concentration of approximately 300 sheep living in the Coyote Canyon area of the Anza-Borrego Desert State Park.

The district attorney's office contends that out-of-state hunters were taken on safaris with a guaranteed "trophy" for fees ranging from \$2000 to \$3000. Information available indicates the take from this operation could total \$400,000!

Hundreds of hunters from 21 states and Canada invaded California to kill the sheep, according to the district attorney's office. Conviction could carry a sentence of three years in prison and/or a \$5000 fine. That makes an expensive trophy—but there is no justification for the slaughter of desert bighorn sheep or any other protected species.

With the month of December comes Christmas trees, decorations and lights, mistletoe and holly. The desert has its own holly and mistletoe and a more beautiful month of the year to enjoy the desert is hard to imagine. I would like to thank all of you who have shown your love of the desert with your tremendous support of this magazine by the use of gift subscriptions.

The staff wishes each and every one of you a Happy Holiday Season!

William Kuyatt



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JACK DELANEY, *Staff Writer*



Volume 33, Number 12 DECEMBER, 1970

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A popular winter resort and recreation area, historic Anza-Borrego Park is seen through the blossoms of prickly pear cactus and ocotillo. See article on Page 26. Photo by David Muench, Santa Barbara, California.

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ELTA SHIVELY, *Executive Secretary*

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AGATE COVE

by Mary Frances Strong

Photos by Jerry Strong



LOW IN STATURE, high in gems aptly describes the Monte Cristo Mountains. Quite possibly, a larger variety of gem material is packed into the 30 miles of this range than any other area of Nevada. A month could be spent exploring the deposits without visiting all the locales.

Turquoise, variscite, obsidian nodules, opalized and agatized wood (the largest tree found was 14 feet in diameter and, while partially covered by sand, could be traced for 300 feet), jasper in all colors, chalcedony, common opal, rainbow jasp-agate plus pastel and sagenitic agate—all of good cutting quality—occur in the Monte Cristos.

Agate Cove offers the collector some interesting material from which to cut stones. Sagenitic agate has always been high on the gem stone popularity list. This is probably due to its scarcity, as well as the beauty of the cabachons when cut from agate containing radiating or needle-like inclusions. It is not plentiful. A day of collecting may turn up a pound, a piece or none. However, it is worth any effort it takes to find it.

Agate Cove will reward the collector with some excellent pastel-colored agate in shades of blue, pink or beige. Also watch for chunks of red jasper swirling through pale blue or white agate. This "lace carnelian" resembles the famed

Lavic, California material on the Mojave Desert; though the red is not quite as brilliant.

Some of the Monte Cristo agate will undercut. Use care when polishing and any techniques you have developed for this problem.

The cove is easily reached from U.S. Highways 6 and 95. The turnoff is one-half mile east of Blair Junction—once a busy railroad point on the Tonopah-Goldfield and Silver Peak railroads. Except for one dug-out, the old railbeds and a sizeable bottle and can dump, there is little remaining at the junction. The dumps have been dug; but, on my last visit, I picked up a small Bismal, medicinal bottle plus several railroad spikes. This is a good location for an overnight stop before heading north into the Monte Cristos.

A half-mile east of Blair Junction, a sign "Gilbert" announces the route to Agate Cove. Turn left (north) and follow the bladed dirt road up the alluvial fan toward the hills.

Nine-tenths of a mile from the highway a road branches off to the northwest. A large rock cairn has been built to mark this turnoff, as it leads to a petrified wood area. More on this later.

The road soon drops into a wide wash which is sandy in places. It might be best to leave trailers within two miles of the

highway or at Blair Junction. Cars and pickups shouldn't encounter any difficulties. At 4.8 miles from the highway, a fine exposure of columnar igneous rock will be seen to the east. Often referred to as "nature's building blocks" they are striking examples of columnar jointing that results under certain conditions from a cooling magma.

In another .3 of a mile, the road turns abruptly right, leaves the wash, climbs over a summit and drops into a canyon on the northeastern side of the ridge; .55 of a mile from the summit, turn left and follow up the wash .4 of a mile. You will see a large rock pillar jutting skyward out of the wash—you are there! Agate Cove is at the end of the road in the small canyon to the east. From this point on it is up to you! The areas to the north, south and east all contain cutting material.

This area was written up by Harold Weight over fifteen years ago. There has only been moderate collecting since then and the short road up the canyon to Agate Cove developed. On our last visit, the location appeared to have seen few collectors in recent years. There was plenty of good material and tons of "leaverite" so be selective.

The cove is a good, sheltered campsite for one or two cars. Protection from the winds which can blow here is always wel-

A rock pillar in the wash is the landmark for the agate collecting area which is to the right of the pinnacle. Gems are usually of good cutting quality, including sagenitic agate.

come. Groups will find the area in the vicinity of the pillar suitable for camping but it offers no protection from a wind soaring down the wash.

Remember the turnoff to the petrified wood area? When you have tired of Agate Cove, head back to the turnoff. Follow the road for 2.7 miles to a brilliantly colored exposure of the Esmeralda formation. Fine specimens of agatized and opalized wood have been collected here for three decades. There is still material for the serious collector who is willing to hike into the hills to find it.

When Harold Weight wrote about the agate deposit, he mentioned his encounter

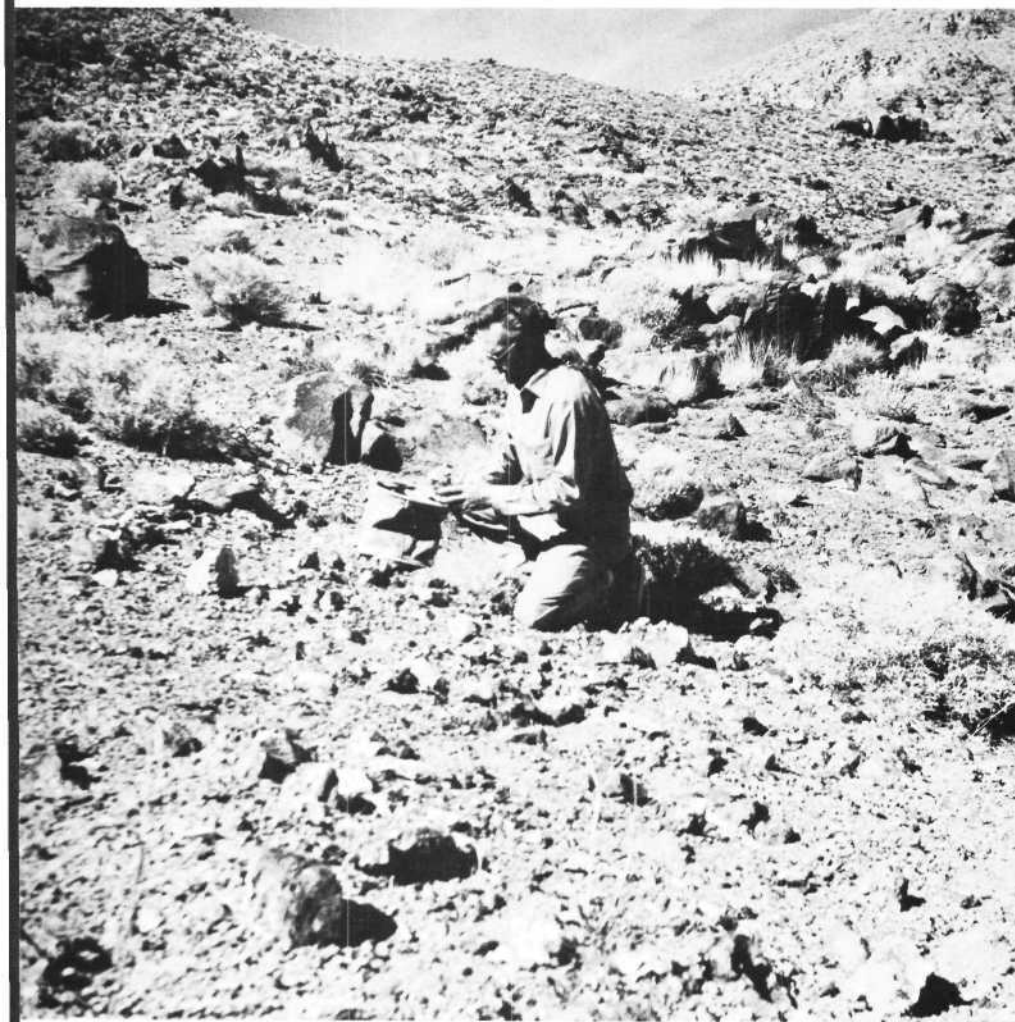
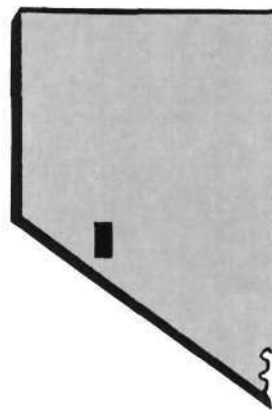
with a "lady gopher snake." I want to tell you about our encounter in the same locale. Like Harold's, our snake gave the impression it owned the place. Our presence brought out its aggressiveness and to quote Harold, "It looped its body back into fighting position, swelled its head to an ugly triangular shape and dared us to start anything. There was no warning buzz, and cautious closer examination revealed no buzzer."

It is with the last statement our encounter differs. Our snake was definitely no gentleman. He did buzz and had a six-button buzzer!

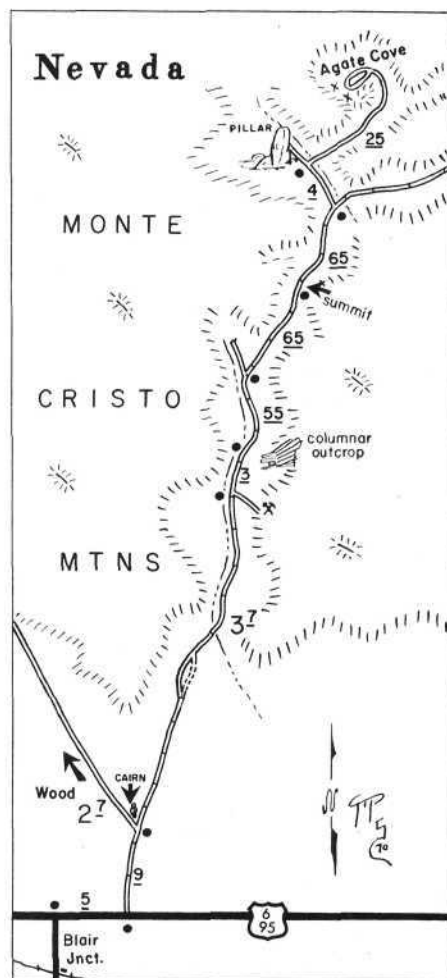
If you've not explored the Monte Cris-

tos, a visit to Agate Cove will be sure to whet your appetite for future trips. The rugged beauty of these dark volcanic hills, with unexpected exposures of the brilliantly-colored Esmeralda formation are striking to behold. There are ghost towns to look over and old mines to explore. Yes—you will want to set your sails for new gem coves in the Monte Cristos. □

Nevada Field Trip



Jerry Strong collects agate from the ash beds at Agate Cove. Good collecting is found in all directions. There are also excellent camping grounds, but bring your own water and supplies to the isolated area. Map (right) shows how to find area.



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Book Reviews

by Jack Pepper

THREE PATHS ALONG A RIVER

By Tom Hudson

Although today it is only a small stream, the San Luis Rey in San Diego County once was a large and flowing river which played an important part in the settlement of Southern California.

Long before the first white man entered the area, the river was the home of Indians whose origination cannot be dated. Later came the Spaniards and then the Americans. It is these three cultures on which the title is based.

Editor of the popular monthly, *High Country*, Hudson's well-written history of the conflict of these cultures gives still another insight in the early settlement of California. Out of print for a year, the book has just been republished. Hardcover, 239 pages, \$6.00.

HELLDORADO

Bringing the Law to the Mesquite
By William M. Breakenridge

"Some of my friends say that my life has been eventful enough to make interesting reading, and since a good deal of it was spent in helping to tame the Indians and bad men in Colorado and Arizona, maybe they are right."

On this low key, Colonel William Breakenridge, one of the most famous and fearless law enforcement officers of the old frontier West, explains why he wrote his memoirs. First published in 1928, *HellDorado* has been out-of-print for many years and now is once again available as a reprint.

From the time he ran away from his Wisconsin home to enlist in the U.S. Army until he resigned as a peace officer, the author's life was never tame. After several years as a mule skinner and In-

dian fighter in Colorado, Breakenridge journeyed to Tombstone, Arizona in 1880 on a prospecting trip. Soon afterward he became a lawman.

In his book, the author describes encounters with and gives the true picture of such famous and infamous characters as Frank Leslie, Curly Bill, John Ringo, Dave Nagle, Billy Claybourn, "Doc" Holliday, Bat Masterson, Wyatt Earp and his brothers, Billy Grounds, Luke Short, Charlie Storms and many others.

His account, as many of his other first-hand experiences, of the Earp-Clanton-McLaury shootout at the O.K. Corral, refutes the popular fiction version of the famous fight. Hardcover, illustrated, 1883 map of Arizona Territory, 255 pages, \$7.50.



A LIGHT HEARTED LOOK AT THE DESERT

By Chuck Waggin

This is one of the most delightful books on desert animals I have ever reviewed. An artist for a Tucson television station, Chuck Waggin has also done art work for the Arizona-Sonora Desert Museum.

"The windows of our house are like color television sets. We switch from one subject to another simply by switching from one window to another—and with no commercial interruptions. From one window we observe a cactus wren building a nest; from another, we see quail bringing their young ones to share in the seeds we gather; and from yet another, we watch hummingbirds sipping nectar from feeders."

Combining his knowledge of the desert with his love of animals, Waggin has produced whimsical sketches of his observations which will delight both adults and children. His prose accompanying each sketch is both informative and amusing. This book proves you can laugh while you learn. Large format, heavy quality paper, 94 pages, \$1.95.

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- HEAVY DUTY ANODIZED TELESCOPING ALUMINUM TUBES with single lock nut to set best length for user's height, adjustable from sixteen to thirty inches.
- COMPLETELY WIRED (not a kit and no radio necessary for operation).
- NINE-VOLT BATTERY, Eveready 216 or equivalent, included with each unit.
- ATTRACTIVELY STYLED high impact molded case and Search Heads balanced for long use without tiring.
- WEIGHT LESS THAN 2 POUNDS.

OPERATING PRINCIPLES

Operates by comparing the frequencies of two colpitts oscillators and amplifying the audio frequency which is the sum of the difference. The fixed oscillator is controlled by the thumbwheel tuner. The variable oscillator changes its inductance when the Search Head is brought into close proximity of any metal. This difference when amplified is heard in the earphone or speaker, as an audio signal tone, or deflects the meter.

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DEPTH RANGE MIN. 4" MAX. 60"

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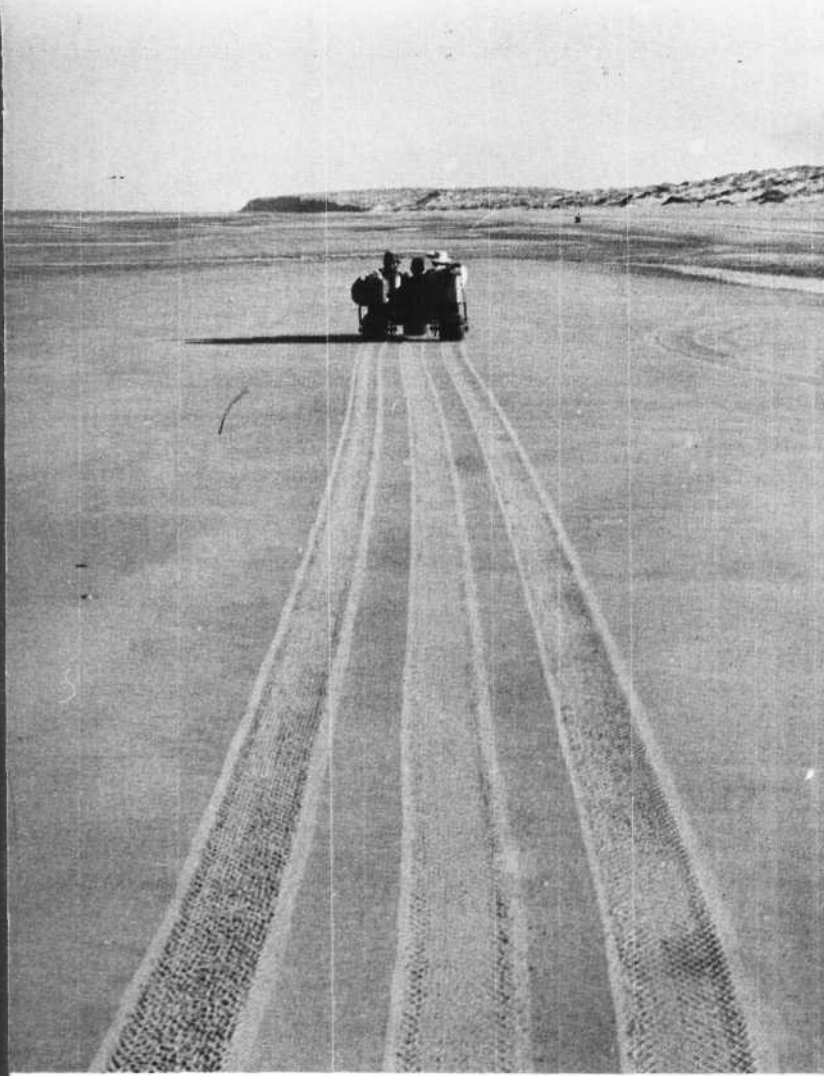
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YUMA:

by Jack Sheppard

THE FIRST TURISTA TO VISIT THE YUMA AREA WAS HERNANDO DE ALARCON WHO SAILED UP THE COLORADO RIVER IN 1540 AND CLAIMED THE COUNTRY FOR SPAIN. TODAY, THOUSANDS OF TURISTAS COME TO THE AREA EVERY MONTH TO EXPLORE ITS HISTORIC MONUMENTS AND RECREATIONAL AREAS AND TO VISIT NEIGHBORING MEXICO AND THE GULF.

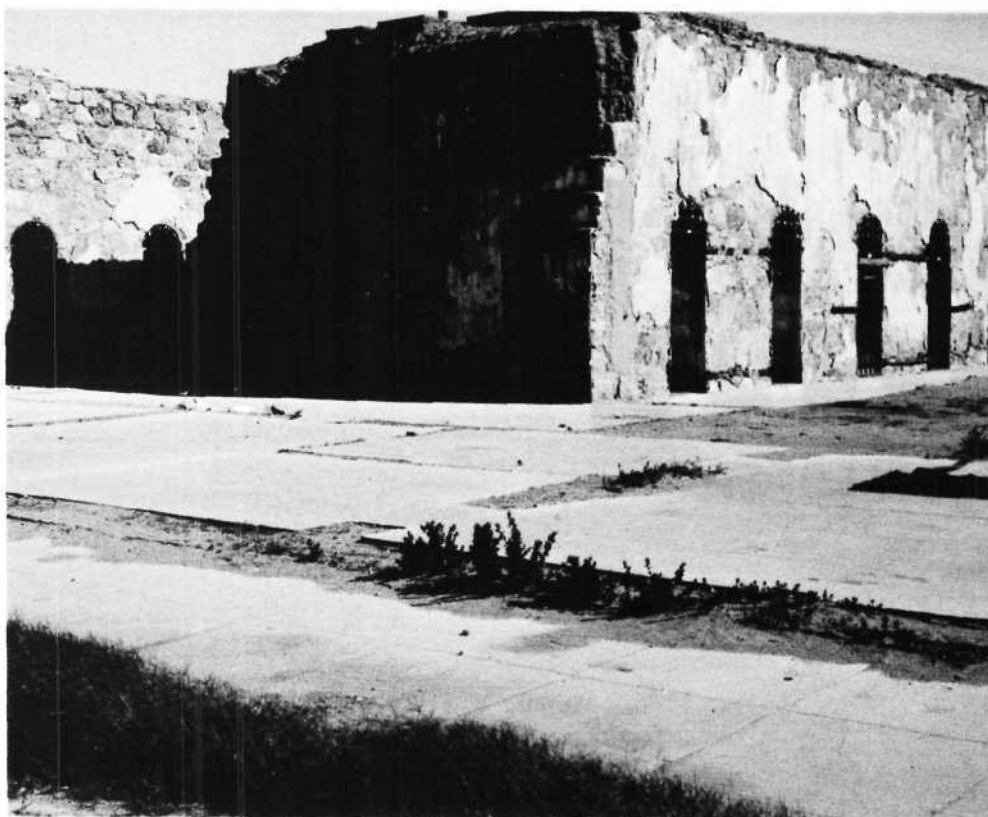


A YUMA NEWSPAPER editor in the Territory of Arizona in 1875 expressed the wishful hope that "a few of our citizens might live until they die a natural death so as to show the world what a magnificent healthy country this is."

At the time he wrote his editorial—only 95 years ago—the basic law of the frontier community was the fast draw and peaceful citizens didn't stand a chance against outlaws, gunslingers and marauding Indians.

It is not known if the editor's life was cut short by a bandit's bullet or if he finally succumbed to natural causes. If the latter was the case, he probably lived a long time as this area in southwestern Arizona is conducive to longevity—now that the bad guys are gone.

The Yuma Chamber of Commerce states their city is the "sunniest year-round spot in the nation with extremely low relative humidity." To prove they are literally speaking they figured out the area "receives an average of 93% of the possible 4400 hours of sunshine yearly which amounts to 4133 hours of



The most famous landmark in Yuma is the Territorial Prison, now a state park and museum. Excellent fishing and clamming—plus uncrowded beaches—are found at Mexico's El Golfo, (top photo), 75 miles south of the border.

SUN AND FUN !!



the sun's golden rays in an average year (not to mention 11 extra hours on Leap Year)."

Taking another proud leap, the Yumans point out that although there is little water above them there is plenty on the ground as they "have more water available for recreation than you can find most places unless you live by the ocean."

If you are allergic to water and getting your feet wet and are not interested in catching trout and bass, then you can head for the back country where there are abandoned mines, ghost towns, legendary lost treasures, mountains and arroyos for gold searching and rock hounding.

And, in case you are not the outdoor type for either aquatic or back country recreation, you will find numerous interesting places to visit both in Yuma and in San Luis, a picturesque Mexican community 25 miles south of Yuma.

Located on the banks of the Colorado River, Yuma has an atmosphere of the old West and Spanish influence combined with a modern city, complete with motels, restaurants and other services

If fishing or water skiing on the Colorado River is a bit too strenuous, there are other ways to exercise.

Monument to Father Francisco Garces who founded the Yuma Indian Mission but was a victim of the Indian uprising in 1781.

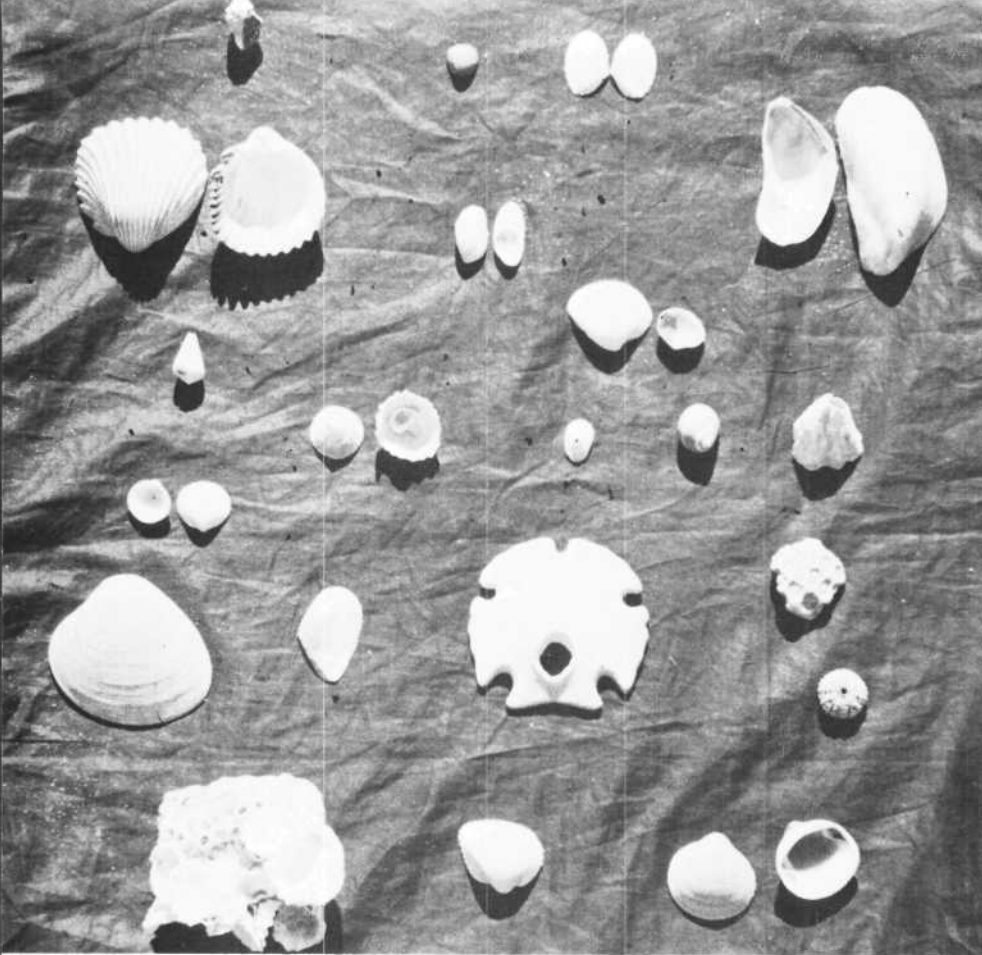
catering to the ever increasing number of tourists.

Tourism and agriculture are the two main economies of the 33,000 residents of this civic minded city. Although I had passed through Yuma on many trips to Mexico I did not have time to stay. On my last trip I decided to stop by the Chamber of Commerce for a few minutes.

I was literally "snowed" (which it never does in Yuma) with literature and tour guides. As a result, I spent four days in the area and could well have spent many more without seeing everything offered. One of the most interesting brochures is their *Territorial Trails—Tours and Selected Points of Interest*.

Divided into five sections, the guide lists 46 major points of interest in Yuma County, of which 12 are in the immediate vicinity of Yuma. You can





Sea shells are found along the shores of the Gulf of California, just south of the Mexican border. Rockhounds also find excellent collecting around the Yuma area.

either go on your own to visit these areas, or attend the weekly guided tours.

I started my own tour at the Yuma Fine Arts Association which occupies the home and gardens of E. F. Sanguinetti, pioneer merchant. In addition to seeing the exhibits of paintings, sculpture, ceramics and photography, one can relax in the adjoining gardens and visit the aviary.

Here also is the Century House Museum with the historic treasures and relics of Yuma's dramatic and sometimes violent past which began in 1540 with the arrival of the first Spanish conquistadores.

Although the Quechan Indians (sometimes called Yumas) had lived for centuries along the Colorado River, the first white man to arrive was Hernando de Alarcon who, in 1540, sailed part way up the river and claimed the territory for Spain.

There are various theories as to the origin of the name Yuma. Probably the most accepted is that it comes from the old Spanish word *umo*, meaning "smoke." The early Spanish noted the Indians built huge fires along the river.

Few white men visited the area after

Alarcon until 151 years later when Father Eusebio Francisco Kino explored the country in 1691. Father Kino's protege, Father Francisco Garces, established the first Spanish mission, "Pueblo de la Concepcion," at the confluence of the Gila and Colorado Rivers on December 4, 1775. Although loved by most of the aborigines, Fr. Garces was murdered during the Indian uprising on July 17, 1781.

With the end of the war with Mexico in 1848 and the signing of the Treaty of Guadalupe Hidalgo, the territories of California and Arizona became part of the United States. California was admitted to the Union in 1850 and Arizona in 1912.

In 1849 a ferry was established on the river and the United States founded Fort Yuma on the California side of the river. The ferry did a thriving business transporting more than 60,000 '49ers across the Colorado on the way to the California gold fields. By 1875 approximately 1100 persons were living—and dying—in Yuma, which was the time our editor issued his plea.

Things got so bad vigilante committees were formed and in 1876 the famous—or infamous—Yuma Territorial Prison was

built in the side of Prison Hill. It was the "home" for the majority of the West's most notorious gunmen. Closed in 1909, it has been the setting for books and TV films. It is now a state park and museum.

For those interested in a complete and fascinating history of the Yuma area, *The History of Yuma and the Territorial Prison* by Dr. Robert Woznicki is available through the Desert Magazine Book Shop. (See page 2).

After going through the "rooms" of the Territorial Prison, I crossed the Colorado on the old bridge and explored Fort Yuma and visited the Quechan Indian Museum and the Methodist Indian Mission. I bought several beautiful handmade Indian crafts. Here also is St. Thomas Mission, built on the grounds of the original Concepcion Mission where Fr. Garces was massacred.

During the second weekend in February, residents of Yuma return to the Old West era as they stage the Silver Spur Rodeo. In addition to the RCA sponsored rodeo, there are beard-growing contests, street dances, Mexican Fiesta Day, Indian Day and a parade.

Dog races are held at the million-dollar, air-conditioned Greyhound Park, January through March with racing Wednesday through Sunday nights. The Yuma County Fair is held in March and the Yuma Kiwanis Gun Show in February and October.

The spring camp of the San Diego Padres is in Yuma where they hold exhibition games during March. The Yuma County Horse Meet is held during the month of April.

Sixteen miles north of Yuma on U.S. 95, Adair Park has picnic areas. A new park project, it also has pistol, rifle and archery ranges all of which are open to the public.

Complete aquatic sports and recreational facilities are available along the banks of the Colorado River and on nearby Lake Martinez and Laguna Lake. The Senator Wash Dam and Squaw Lake Recreational Area, 20 miles north of Yuma, is one of the newest in the West. There are other smaller lakes, all of which provide camping facilities for fishermen, water skiers, boaters and sunshine addicts.

Rockhounds, campers and desert explorers will discover interesting country in all directions from Yuma. Abandoned

mines and ghost towns can be found and the country is a hunting ground for agate, geodes, petrified wood, palm root, palm fiber, chalcedony roses, jasper, turquoise, quartz crystals and many other gem stones.

The Yuma County Gem and Mineral Society conducts a monthly guided tour. It is located in the Clymer Building, 571 Orange Avenue, Yuma, Arizona 85364.

There are many back country roads emanating from Yuma, both for passenger cars and four-wheel-drive vehicles. One of the most scenic passenger car drives is from Yuma on U.S. 95 to U.S. 60-70 and the rockhounding center of Quartzsite. Off U.S. 95 is the Kofa Game Refuge, established in 1939 to preserve and protect the vanishing bighorn sheep. Their numbers are increasing, with an estimated 300 now on the range.

Twenty-three miles south of Yuma and just across the Mexican border is the charming community of San Luis where bullfights are staged during the winter months.

Unlike many border towns, San Luis is not out to get the *turista* dollar with cheap junk. It is a modern agricultural community of 60,000 and playing host to tourists is secondary to their economy.

There are excellent motels, restaurants and other services. You can purchase authentic and beautiful handmade Mexican crafts without being pressured and usually at a lower cost than at other border towns.

San Luis is also the gateway to the interior of Mexico and the excellent fishing grounds along the Gulf of California. From San Luis, a good paved highway (S2) goes to Sonoyta and then south into Mexico.

For fishermen, San Luis is the entrance to the fun-filled fishing and clamming community of El Golfo. (See Desert, July '69.) Natives of El Golfo are available to take you fishing or show you how to "harvest" the clams—and also how to cook them over your campfire. There are miles of beautiful beaches for camping.

A newly developed sport at El Golfo is water skiing without a boat. Instead of a boat the skiers are pulled along the edge of the water by four-wheel-drive vehicles.

Which shows that anything can happen in the Yuma country—and it usually does.

METAL DETECTORS

GOLD DREDGES

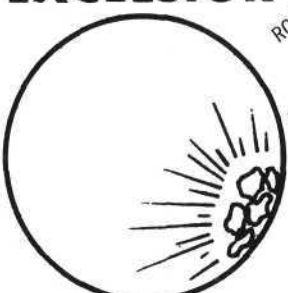
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WINTER RESORT!

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CALENDAR OF EVENTS

December 31

2nd Annual Youth Festival, sponsored by Caballeros de Yuma, Inc.

January- March

Greyhound Racing. Yuma Greyhound Park.

January

Phoenix Open Satellite PGA Golf Tournament, Yuma Golf and Country Club.

February 13, 14

Silver Spur Rodeo, Rodeo Grounds.

February 13, 14

6th Annual Yuma Citizens Band Radio Assn. Jamboree, Yuma County Fairgrounds.

February 20, 21

Yuma Kiwanis Gun Show, Yuma County Fairgrounds.

March 5 thru March 28

Major League Baseball—San Diego Padres, Desert Sun Stadium.

March 6, 7

Annual Square Dance Festival

March 31 thru April 4

Yuma County Fair, Yuma County Fairgrounds.

April 17, 18, 24, 25

Horse Racing, Yuma County Fairgrounds.

November 21

Stock Car Racing, Yuma Speedway.

November 26

El Toro Bowl—2 p.m., Kofa High Stadium.

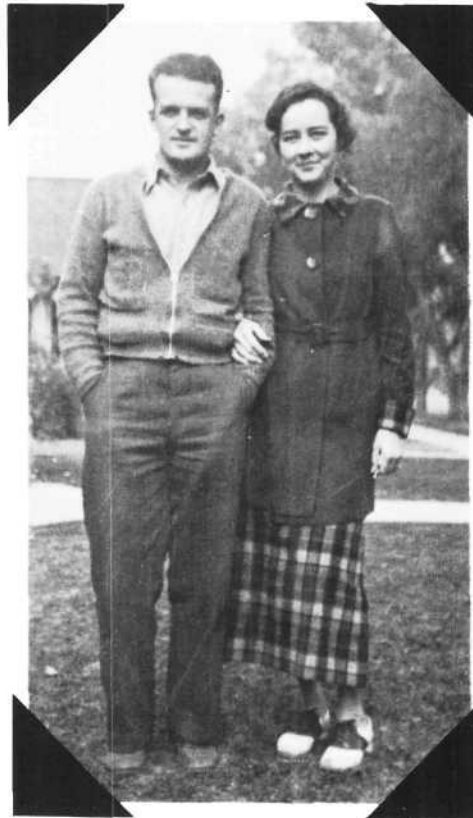
December 5

Annual Barbershoppers Show, sponsored by Yuma Territorial Prisonaires, 8 p.m., Post Auditorium.

December 12

George Gershwin Program, sponsored by Yuma Symphony Orchestra

Anniversary



LATE ONE fall, when the pangs of the depression were supposed to be easing, I put my brand on a cute, good natured, skinny (then) brunette, went in hock to buy a primitive metal detector, and figured I was "gonna get rich" pronto.

To stay off the relief rolls, my dad and I were hardrock leasing in a hole over northeast of the old ghost camp of White Hills, Arizona. "Leasing" was simply a gambling dicker with the owner of an opened up, marginal paying, or un-worked mine, to take out ore on a percentage basis. The rule of thumb in those days was 10 percent off the top to the owner—and since he wasn't putting up any money or sweat—it often was a mutually satisfactory operation.

We were on a strictly poverty budget. We had taken a bunch of samples and had representative assays and the project looked pretty good. Good enough anyway, so that the owner of a Las Vegas used-machinery and junk yard agreed to gamble with us on a lease-purchase basis. We camped in an old school bus he had, and were revamping used jackhammers, drill steel, compressors, hoist, cable, motors, etc., when we lucked out.

Charlie, the junk yard owner, came walking over with two of the biggest, brawniest men I had seen in a long time and bluntly said, "I've brought you a couple of good miners to work for you in your new hole."

A little irritated, I snapped, "You

A few months after Ken Marquiss married a "cute, good natured, skinny brunette", he took her into a desolate area of Nevada to look for lost ingots.

know darned well we are on a poverty stake! How can we hire miners?"

Unruffled, he retorted, "You're getting machinery on a gamble, you've got grub and gas for a while, they're broke and need work. They will gamble with you, too, if you'll feed them—at least until you make the second shipment. He introduced the two Mormon brothers, George and Jerry Mayhew from central Utah.

Their brawn, underground know how, and honest work—plus a widening ore vein—soon had the old "Climax" hole on a paying basis. They were able to send money home, and Dad and I were able to pay off Charlie and become modestly—and temporarily—flush.

My wife was working in the California home stomping grounds, but with the Thanksgiving season in the offing and with the comfort of good ore ahead of

Another true adventure by Ken Marquiss who has spent more than 40 years researching and looking for lost bonanzas throughout the Southwest.

In "Anniversary Ingots", he goes back to his early days.

This month—at a youthful 61—Ken is back-packing into Southern California's Santa Rosa Mountains in search of still another "lost ledge of color."



Ingots



Many years after her first adventure into looking for bidden treasure, Mrs. Marquiss (right) returned to the area with her husband—and a new metal detector. Remains of old graveyard at the mouth of Tybo Canyon (below) with white streak in background where silver ingots are supposed to be buried.



us, I wrote suggesting she bring Mom—and the metal detector—for a visit.

I had bragged about the detector, and as we sweated over the big iron muck sheets loading ore buckets, Jerry had asked, "Will it find silver slugs?"

Jerry could hardly wait until I found time to demonstrate the machine, and followed me around like a nine-year-old drooling over a Christmas bike. When it "whistled" over old metal scrap he had

surreptitiously planted at night he was convinced, and I heard about some hijacked bullion "up north."

So to "celebrate" our first anniversary, I took my new wife, metal detector and Jerry on a treasure hunt into the cold and windy section of east central Nevada to look for five big silver bars.

We headed across the new top of Hoover Dam to Las Vegas, thence northwest to Tonopah, and then swung

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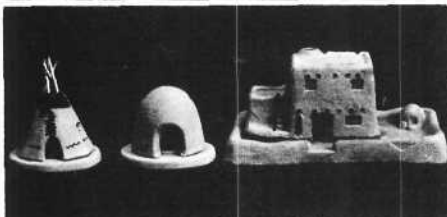
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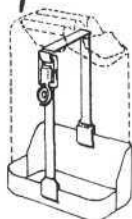
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Author's father dumps ore into bin for reloading at the Climax Mine, near the old mining community of White Hills, Arizona.

east 50 or 60 miles toward the old ghost town of Tybo. The wife surveyed the seemingly endless miles with a jaundiced eye.

Being of Dutch Mennonite heritage, she could have saved the erudite Dr. Einstein a lot of savvy time—because she promptly dubbed (and always after referred to) that section of the state as "the far apart part of Nevada." It couldn't be better described.

We were almost there when the unexpected happened. Cresting a rise, I skidded into a narrow little rain gully that had cut the dirt road in diagonal fashion. I was driving an old lemon Nash Lafayette car; and the jolt spread the front wheels like Charlie Chaplin's famous shoes and bent the tie rod in a bow over the front axle. Driving, even at a slow walk, was out of the question; the tires wouldn't have lasted two miles.

It was almost 60 miles back to a garage, fifteen to the nearest human habitation; it was late afternoon and we were on a little used side road. I understandably was near having my seams come unglued, when Jerry had an idea.

He had been squatting and squinting at the front end of the car and said, "I used to straighten drill steel cold over an anvil. If we can find a nice big round rock,

a big one, and if that tie rod metal is any good, maybe I can straighten it."

We jacked and propped up the axle on small rocks set in dirt, and found a big boulder to his liking. While I kept my fingers crossed (and prayed) Jerry squinted along the tie rod and then banged it over the boulder.

We unravelled an old piece of canvas to get enough string to line up the wheels, bolted the tie rod back in place—and took off! When we returned to Tonopah the wheels were only an eighth of an inch out of line!

Jerry had mined and blacksmithed all over that part of the country. That night we were the guests of a gracious Mrs. Williams who, with her two sons, ran the beautiful old Hot Creek Ranch.

Early the next morning we took off for a mineral seep about four miles east of the ranch called Blue Jay Spring, near where the bars were supposed to be buried. The immediate area of the spring is highly salt mineralized, and I was constantly tuning that primitive old detector. Two weary days later, we were convinced the silver bars had *not* been buried anywhere near Blue Jay, so we headed back to the prosaic sweat of "beating rock" at the Climax.

In 1947 I was again in the area with a better machine and a new civilian jeep.

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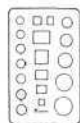
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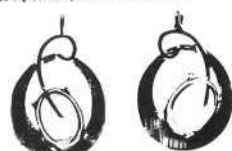
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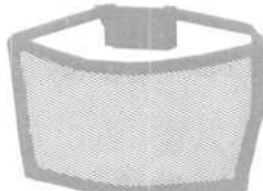
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Climax Mine where Ken Marquiss made a living during the depression years of the 1930s.

The story of the silver bars still haunted me, so I decided to find out all I could about the yarn that had sparked our previous trip.

Much "kerosene lamp and wood stove talk" later, and hundreds of dusty Nevada miles further, I had the full story—of which Jerry had only had a part.

The best, and seemingly the most accurate information, came from the old man near Austin, Nevada, whose father had been directly involved as a deputy sheriff and posse member in the business.

According to him, when the old silver camp of Tybo was in its heyday, they used to ship smelter slugs by four-span freight wagons north to Eureka, Nevada, for transshipment. After loading, they generally watered and hobbled the horses the first night just north of Hot Creek, the second night "up around Morey."

One trip a wagon carrying slugs was held up the afternoon of the second day by three drunken miners wearing "owl-hoot" flour sack masks and leading three pack mules.

They loaded the pack mules without trouble until they were just about ready to leave, when there was a sudden burst of gunfire and one of the robbers was wounded and the guard-swamper "was dropped in his tracks."



The bandits and their loot disappeared into a nearby canyon, and the "skinner"—unhitching his near wheeler, that was already saddled—went flogging for help.

The posse cut the tracks of one bandit on the Railroad Valley side of Reveille Mountain, cornered him and "shot him up." Before he died, he told the law men, "No sir, I ain't sorry I did it—just sorry you caught me, and will get the silver back. Iffn I had made 'er to Pioche I'd a gottaway clean."

He said the three split up in the canyon, and he had headed east and holed up in a deep gully until dark. Then, figuring to throw off pursuit by back tracking, he headed for Tybo, staying east of the road. He watered at Blue Jay, but his timing was bad. The first light found him on the big bare alluvial slope "on a direct line and about half way between Blue Jay and the Tybo graveyard." Frantically he looked around, found a badger hole on the edge of a shallow gully, hid the silver in it "and stomped it shut."

He then headed southeast at a canter, towing the mule. After about a half mile of this he could see such progress was futile, cut off the pack saddle, turned the mule loose, "and headed for Pioche at a high lope."

He died cursing his captors, and hoping "that silver will poison your dirty gizzards."

According to my informant half of Tybo went looking for the bars, but how



do you separate mule tracks from horse tracks; particularly when they are two or three days old and there are all kinds of bang tails in the area? What happened to the other two bandits is a story seemingly lost in the shadows of time.

Further search in '47 was cancelled out for me by a snow storm. I tried again between jobs in '48 and '57 without any luck at all. My detector kept silent on every gully bank I could find in "the halfway area" that was big enough for a badger hole.

There's a lot of space between the old Tybo graveyard and Blue Jay, and my time factor was limited because I had to work for a living.

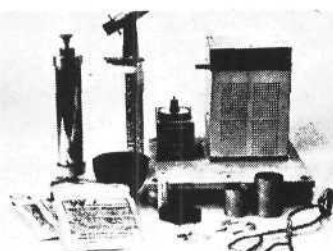
Recently, on our anniversary trip (with a twinge of nostalgia) I revisited the Tybo country—with the same wife, the old reliable truck-camper, the old reliable trail bike—and a hot new "bug." We had a lot of fun visiting the old spots, and bugging new areas—but NO silver.

I've searched for the last time, and Jerry was killed years ago by a mine cave-in up in Utah.

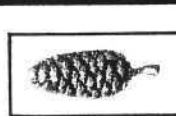
So, if you can flush out an electronics wizard who can make you a detector with a 50-yard sweep that can be carried on a trail bike—or, if you are the lock-jaw bulldog type with money enough to disregard the space-time factor; and if you have more patience, bug batteries and persistence than I have, then I hope your answer comes up a BIG FIVE—and that it doesn't take you 34 years!!



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Left: A six inch copy of a genuine Rio Ixtlan burial figurine. The author purchased it for ten pesos (80c), mounted it on a wooden block and has it displayed in his home. (Author's collection).



FACTS MEX ARTI



SEVERAL MILLION North Americans visit Mexico every year and the tourist traffic is still on the rise. Among this horde of sun and fun pleasure-seekers are visitors who may carry back a dangerous souvenir: a pre-Columbian artifact. Most prevalent in archeological zones, peddlers of ancient Indian artifacts seem to lurk in every Mexican doorway—and with them lurks a danger that few collectors of these curious pieces understand.

Only an infinitesimal number of these pottery articles are genuine, but those that are can give the buyer a much longer "vacation" in Mexico than he wants. Possession and transportation of any legally designated "national treasure" is prohibited by Mexican law and failure to comply with this law can get the seller AND the buyer into serious trouble. Possession of a genuine pre-Columbian artifact can result in a whopping fine and a probable

Right: The jointed figurine at upper left is a product of the early East Coast Olmec Indians. (Museo Nacional). The smiling face pottery head is from Vera Cruz. The originals that have been found are nearly all in museum collections.

ABOUT ICAN FACTS



by Bill Mack

jail sentence for the guilty parties.

The vendors of these figurines are well aware of the penalties and dangers. As a result, nearly all of the items offered for sale are clever counterfeits—although the salesman will swear on his mother's grave that they are straight from a Mayan, Aztec or Toltec tomb. More likely they are straight from a busy assembly line producing professional phonies.

Called *monos*, or monkeys, the adobe clay statuettes, real or not, are intriguing and interesting collectors' items.

The exact purpose of these figurines is not known. They are found in the deep boot-like tombs of the pre-Aztec cultures that flourished throughout Mexico and Central America. Sometimes three feet tall, the statues often depict physical illness or deformities. Archeologists have speculated they may be pictorial representations of the deceased's physical con-

ditions, an ancient medical record in baked clay. Others suggest that the *monos* depict people who may have been regarded with superstitious awe, much as the Indians of North America regarded the insane as specially God-chosen.

Even more curious than the *infermos*, or sick ones, are the hermaphrodites. A considerable number of the figurines are both male and female. It is believed that transvestitism may have held some special significance in their religious beliefs. Many of the figures, obviously male, are dressed in female clothing, even to such details as "falsie" brassieres.

The ancient makers of these clay figurines did not confine their art to the sick. Many are laughing and it is apparent they are clowning. Perhaps the puzzled archeologists surmise that the deceased died happy.

A leading center for the manufacture

Opposite page: one of the most obvious and amusing of the counterfeit "monos". The maker of this two foot pottery figurine apparently had access to a reference book on Egypt as the figure has the nose of a proboscis ape and a conventionalized lotus sign appears between its feet. (Private collection) The smaller figurine at the right is a genuine 1300 year old Nayarit burial figurine. (Museo de Estado de Nayarit).

of the spurious figurines is a suburb of Guadalajara, Jalisco that has the tongue-twisting name of Tlaquepaque. The area has become so notorious for its questionable archeological activities that the name of the area has become a synonym for falsity. To a Mexican any questionable product, archeological or not, is "genuine Tlaquepaque."

A common practice among the manu-

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D-4

facturers of these imitation antiquities is to break the completed figurine and re-assemble it with a hand, leg, nose, or ear missing. That, and a liberal coating of dirt, makes detection of the fraud more difficult. A test for age, used by experienced archeologists, goes by the inelegant name of the "spit test." It is literally that. A drop of saliva placed on a genuine *mono* is not absorbed. The counterfeit pieces whose clay pores have not filled with age old mineral deposits, soak the saliva into the figurine within minutes. Unfortunately, this simple test is far from foolproof. A coating of wax will render the *mono* practically waterproof. Museum scientists place their faith in more modern methods. If the original clay contains, as it often does, organic materials, a carbon-14 age test is reliable. It is also possible to use X-Ray fluoroscopy or thermoluminescence with radioactive isotopes. Most of the tested figurines from the Jalisco-Nayarit area are approximately 1200 years old, with some as recent as three hundred years ago.

Despite the fact most all of the artifacts are counterfeit, collecting them is a fascinating hobby. Figurines, molded of unfired red clay, are often on sale in curio shops, markets and department stores. Most of them are faithful copies of the genuine treasures, which, because of their diversity, are seldom alike in appearance. The frankly phony *monos* can make an eyestopping decorator piece if properly prepared.

Most collectors of these oddities insist on a bill of sale and many take the pains to scratch *becho en Mexico* (made in Mexico) on the base to provide further insurance against confiscation by customs inspectors.

Preparation for display centers on the



"aging" of the figurine. Oil paints, diluted to a water-thin mixture, are dabbed on the raw clay. Colors used are generally yellow, green, ochre and a dull red. A coating of household wax is applied and the figurine is baked in an oven for a few minutes.

The waxing process is repeated and the clay figurine is again subjected to heat, usually placed in a bed of coals and left for several hours. A little dirt and some more imagination and the figurine is ready for display. Solid wooden bases help to display the figurines at their best. Termite or worm-eaten wood is especially

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These authentic South American artifacts of pre-Columbian origin are on display at the Desert Magazine Book Shop in Palm Desert. Figurines are from the collection of Charles Barros.

good as its appearance suggests antiquity.

Prices for the safe certified "non-genuine" *monos* vary wildly, but smaller figurines up to six inches in height can be purchased for less than fifteen pesos (about \$2.00) and often for a good deal less.

Mexico is a wonderful country. It offers exotic and interesting cities, bargain basement prices, and for the collector, a wealth of treasures in ancient bottles, colonial relics, outstanding art and unique items of every sort.

But for the would-be collector of archeological antiquities it offers a plentitude of problems. Before you purchase a national treasure, give some thought to the consequences. A jail is a jail and confinement in a Mexican jail is not a pleasant experience. ☐



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IT'S PLAYTIME





E IN BORREGO

by Jack Pepper

BETWEEN CALIFORNIA'S Salton Sea in Imperial County and the Cleveland National Forest in San Diego County lies the Anza-Borrego Desert—a million-acre stage where the geological evolution of the past is presented in a theater where actors are descendants of animals and plants whose ancestors made their debut long before the first appearance of *Homo sapiens*.

The setting for the stage of this dramatic theater began approximately 15 million years ago when water from the Gulf of California flooded into the Salton Sink of Southern California and penetrated as far north as San Geronimo Pass, only 50-odd miles south of metropolitan Los Angeles.

As one million-year era after another passed, the Colorado River, while gradually forming the Grand Canyon, dumped her muddy waters into the Salton Sink, pushing back the salt water until about 5 million years ago a giant fresh water

lake replaced the brinish waters of the Gulf of California.

This overburden of fresh water and sediments, varying from 3000 to 7000 feet deep, caused the crust of the earth to twist and turn as earthquakes created fissures through which molten lava oozed to the surface. The overall turbulence changed the face of Southern California and when the earth cooled and settled it formed the stage of the Anza-Borrego theater we see today.

The ever-changing play in this giant natural theater can be seen from the seat of a four-wheel-drive vehicle, by foot or from the more comfortable seat of a camper or passenger car. A typical back country safari by 4WD and foot is described by Richard Bloomquist in this issue and similar articles will be published during the next few months.

However, for those who do not have back country vehicles and want to see

the drama of this "last frontier" there are miles of good graded and paved roads leading to the main attractions.

From the standpoint of traveling and sight-seeing, there are three sections of the Anza-Borrego Desert, which itself is part of the 8000-square-mile Colorado Desert. Within the Anza-Borrego Desert is the 478,000 acre Anza-Borrego State Park whose public lands are maintained and supervised by the California Department of Parks and Recreation.

Within and completely surrounded by the State Park is the community of Borrego Springs which, until several years ago, was known as a retreat for retired San Diegans and a producer of alfalfa, dates, grapes and citrus. There were only a few motels and limited services for both travelers and residents.

Although still maintaining its reputation for peace and quiet where one "can get away from it all," Borrego Springs is



Influence of the early Spanish missionaries is seen in the architecture of St. Richard's Catholic Church, originally called the DeAnza Mission.

Southwest, have been published in *The Colorful Butterfield Overland Stage*.

The latest of the collection was contributed by Mrs. Cyria Henderson, widow of the late Randall Henderson, founder of *Desert Magazine*.

In marked contrast to the primitive camp sites available nearby, Borrego

flexing its muscles and promoting residential areas and tourist facilities. Completion of two major construction projects have sparked the economy.

The paved Borrego-Salton Seaway — following the old Truckhaven Trail—between Salton Sea and Borrego Springs was completed in 1968 and cuts several hours driving time for tourists coming from Los Angeles.

The Mall, a modern adobe-style shopping center with 14 stores, including a bank and art center, opened its doors three years ago and today is the main gathering-place for residents and tourists. The Mall features showings of well-

known desert artists during the winter season.

The James S. Copley collection of the famed Butterfield Stage paintings by Marjorie Reed Creese are now available for public viewing for the first time at the La Casa del Zorro in Borrego Springs.

The famous artist spent 20 years researching the history of the Butterfield Trail and creating the dramatic oil paintings. Copley purchased the bulk of the collection in the late 1960s.

Four-color reproductions of the paintings with descriptive text by Richard F. Pourade, editor emeritus of the *San Diego Union* and author of five books on the



Springs now offers the ultimate in resort accommodations with the Villas Borrego located adjacent to the Mall. These luxury apartments are available weekly, monthly or by the season.

For a totally different experience, the Borrego Roadrunner Club—a first-class mobile home community provides just about every conceivable recreation in a setting that is hard to imagine. Surrounding an executive golf course, the Roadrunner Club is ideal for the weekender



Font's Point overlooks the Borrego Badlands. Accessible by passenger car, the spectacular view area is named after Father Pedro Font, Spanish missionary who stopped there in 1775.

Within the Anza-Borrego State Park is the community of Borrego Springs where winter residents and visitors find a variety of accommodations such as the DeAnza Country Club (right) and the Roadrunner Club (aerial below).

the semi-retired or a great second home. An air of fun pervades and most any week will find the residents, with box lunches, heading out to "explore" the Anza Borrego State Park. Some of the areas visited include the long-abandoned home of DESERT Magazine contributor Marshal South, whose articles in the early



40s had a huge following. Hapaha Flats, the Elephant Trees and Split Mountain are just a few of the areas enjoyed.

Daily regularly scheduled flights from the Borrego Springs airport go to San San Diego. Despite these modern innovations, the majority of the residents of Borrego Springs own 4WD vehicles for exploring the Anza-Borrego Desert. Four-wheel-drive vehicles may also be rented.

Headquarters of the Anza-Borrego State Park are located just outside of Borrego Springs and it is from these head-

quarters the "Self-guiding Automobiles Tours" start. The well-informed rangers at the Park headquarters provide literature on the ecology, plants and animals and travel information on the area.

For campers, lists and locations of both modern and primitive campgrounds are available here — along with regulations governing back country roads, cooking fires and other rules designed to keep the Park clean and healthy for the thousands of monthly visitors.

The Anza-Borrego State Park is one of the few California parks where camping is also allowed outside of campgrounds in designated washes and alongside back

country roads. However, to protect this privilege, respect such restrictions as no wood or ground fires, no traveling except on designated roads or washes, no collection of plants, artifacts or rocks—and no firearms. For complete information write to Headquarters, Anza-Borrego State Park, Borrego Springs, California.

In order to get a detailed view of the plant stage of the desert, while at park headquarters in Borrego Springs be certain to take the Nature Trail through Borrego Palm Canyon, adjoining the camping area. More than 25 different kinds of flowers, cacti and rock formations are on display and described in a

One of the many unusual attractions in the Park is the Pumpkin Patch, named from the large sandstone concretions, at the edge of Tule Wash.



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guide furnished for the walking tour. While going through the canyon you will see many types of desert lizards—all of which are harmless.

The Anza-Borrego Desert is famous for its wildflowers which, in the spring—depending on the amount of rainfall—create a phantasmagoria of color across the sand dunes and through the rocky washes. More apparent are the verbena, primrose and desert lilies, overshadowing the millions of tiny and delicate smaller flowers which can only be seen and appreciated by walking.

Contributions to the colorful panorama of the desert theater are the blooming ocotillo and cactus and the mystic beauty stage include the kit fox, grey fox, kan-of the smoke trees. Other actors on the garoo rat, antelope and round-tail ground squirrels, coyote and jack rabbit. Other—and more elusive—actors include the big-horn sheep, bobcat, mountain lion and mule deer.

More than 150 varieties of birds, including the loggerhead shrike, mocking-bird, quail, dove and raven can be seen, along with the favorite member of the cuckoo family, the roadrunner, known for his ability to kill a rattlesnake.

Main points of interest which are accessible to regular campers or passenger cars are located along the Borrego-Salton Seaway as previously mentioned and along State Route S2 from Ocotillo to Scissors Crossing and then left (east) on S3 through Sentenac Canyon and Yaqui Pass to Borrego Springs. Another scenic route into Borrego is from Warner Hot Springs on State Route S22.

State Route S2 into Borrego Springs and S22 to Warner Hot Springs roughly follow the historic Southern Emigrant

Trail and the later Butterfield Overland Stage Route. Along this route are campgrounds and historical markers showing evidence of the famous trail. (See *Along The Butterfield Trail, Desert*, Oct. '70.)

First white man to come into Anza-Borrego was in 1772 when mounted soldiers of the Spanish Army led by Pedro Fages invaded the area looking for deserters. Fages' diary was the first insight into the desert and the aborigine Indians. He was followed by Captain Juan Bautista de Anza in 1774 who led a group from Sonora, Mexico looking for a route to San Francisco. The most authoritative book on the area for history, nature, places to see, maps, etc., is Horace Parker's *Anza-Borrego Desert Guide Book*. It is listed in our Desert Magazine Book Shop on Page 4.

There are many points of interest along the Borrego-Salton Seaway, some of which can be reached directly by automobile and others which require a short walk to the immediate area. All are worth the effort and—it is only when you walk that you will really appreciate the desert theater.

One of the main panoramic views is Font's Peak which can be reached by car four miles from the main highway over a good graded road. Font's Point affords a spectacular overall view of the Borrego Badlands and the setting for the stage which began 15 million years ago.

So take time to spend a day, two days or a week—or maybe a lifetime—to visit one of Nature's largest theaters where the acts change from month to month, the color from hour to hour, and the actors are continually playing in their natural habitats—only waiting for you—the audience. □

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POINTS OF INTEREST

To list all the major points of interest at Anza-Borrego Desert State Park is impossible. For one thing, they haven't all been discovered yet, and those that have are far too numerous to mention. We can, however, present some of the scenic highlights.

Font's Point (map coordinates D-7) - From the overlook you will see the sculptured Borrego Badlands, a maze of barren, steep-sided ravines and flat, dry creek beds. Its stark appearance is the result of an almost total lack of vegetation. North of the point are the tall Santa Rosa Mountains.

Yaqui Well (F-4) - Many ghost legends of lost gold mines originate at Yaqui Well, a famous old seep in the San Felipe Wash. The seep is on the flyway of many migratory birds. A large stand of giant desert ironwood hosts an abundance of mistletoe, the berries of which furnish food for the wildlife.

Split Mountain (H-8) - This is easily one of the more breathtaking sights in the park. Perpendicular canyon walls rise more than 600 feet in places, and during desert downpours the runoff from 60,000 acres turns the narrow gorge into a torrent of water, sand, boulders, and brush. Flash floods obliterate jeep trails and rearing creek beds.

17 Palms Oasis (D-9) - A desert seep provides sufficient water to enable this small group of palms to survive. Roads to this oasis are recommended only for four-wheel-drive vehicles.

Mountain Palm Springs (K-7) - Several groups of palms are hidden from view in the three branches of this canyon. Elephant trees can also be seen on the rocky slopes.

Elephant Trees (G-8) - Most of California's puffy looking elephant trees grow in the park. The trees are a botanical oddity, and a large stand of them grows on a rocky hillside a short distance from the mouth of Split Mountain. There are scattered specimens in Indian Canyon and Bow Willow Canyon farther south. A trail leads to the Fish Creek grove from a parking lot 1.5 miles away.

Box Canyon Historical Area (H-4) - The canyon was one of the more difficult passages on the Southern Emigrant Trail. The famous trailblazer Kit Carson, the Mormon Battalion, and the Butterfield Overland Mail all followed this route.

Caliche Canyon Scenic Area (C-9) - This is an outstanding area of unusual sandstone canyons and formations. Caliche trench mining operations still leave scars on the landscape. It is accessible only to four-wheel-drive vehicles or by foot.

Palm Spring (J-7) - A mesquite oasis with a few native palms, it is a good bird and wildlife area. It is of historical significance, and a marker tells the story of how early travelers used the waterhole.

Lookout Point (D-4) - This is an overlook near the Culp Valley primitive camp area. On a clear day, the 260-square mile Salton Sea is visible 30 miles to the east. The sea lies 235 feet below sea level and is noted for its excellent water sports and corvina and sargo fishing.

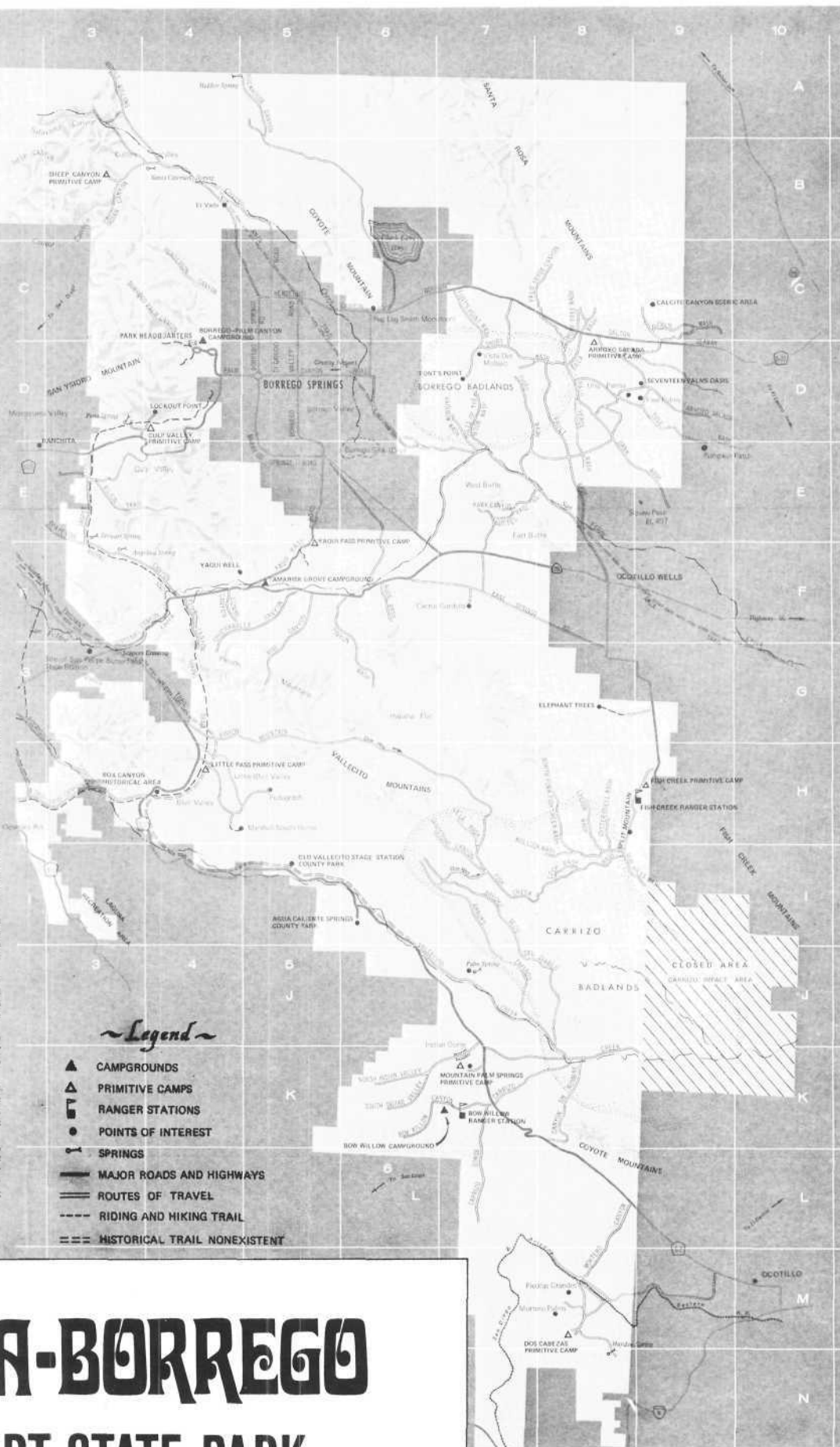
Sandstone Canyon (I-7) - Four-wheel-drive vehicles, and only narrow ones at that, can negotiate this most spectacular small canyon in the park. Flanked by sheer walls often rising to 200 feet, the canyon winds tortuously into the badlands. Here the brute, cutting power of desert thunderstorms is graphically illustrated.

~Legend~

- ▲ CAMPGROUNDS
- △ PRIMITIVE CAMPS
- RANGER STATIONS
- POINTS OF INTEREST
- SPRINGS
- MAJOR ROADS AND HIGHWAYS
- == ROUTES OF TRAVEL
- RIDING AND HIKING TRAIL
- === HISTORICAL TRAIL NONEXISTENT

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BEYOND INDIAN GORGE

by Richard A. Bloomquist

SOUTH OF Agua Caliente, and west of San Diego County Road S2, there is a whitish cleft in the mountain. Behind the cleft rises a peak shaped like the crown of a Mexican hat. The cleft is Indian Gorge, the hat-shaped summit, Sombrero Peak. Both serve as guideposts to a secluded corner of Southern California's Anza-Borrego country — rich in beauty, prehistory and botanical interest. Few sectors of the desert, in fact, have so many attractions gathered together in such a small tract of land.

Indian Gorge is the gateway to this "little world" where desert and mountain blend. Eight and one-half miles south of Agua Caliente on S2 the sandy road which penetrates the gorge breaks from the pavement and winds off to the west. The turnoff is marked by one of the low, brown and yellow posts which indicate back country routes of travel in the Anza-Borrego Desert State Park. In less than a mile the jeep road is within the confines of Indian Gorge. "Gorge"

in this case, however, is a misnomer, since the cut is in reality only a narrow canyon. Half a mile in are the remains of a cattle fence, no longer in use. I shifted to four-wheel-drive at this point to overcome the deepening sands.

After a few more curves the terrain opened up somewhat; then, on the right, I saw the post marking Torote Canyon. *Torote* is the Spanish word for elephant tree, and dozens of the plants—rare in the United States—thrive along the slopes of this tributary watercourse. The rocky wash can be driven for only a few yards, yet the hiking is easy beyond road's end.

I examined one specimen a short distance upstream. It was about eight feet tall, with a trunk nine inches thick near the base. The trunk and lower limbs seemed ponderous and swollen when contrasted with the delicate, reddish upper branches. (The plant takes its name from this thickened appearance of its lower parts, which, with imagination, can be likened to the trunk and legs of an ele-





phant). Near ground level the brownish, parchment-like bark was peeling away. The elephant tree, *Bursera microphylla*—really a massive shrub rather than a tree—is one of the west's rarest and strangest plants. In the United States it grows only in Arizona and California, with California's specimens being concentrated in the Anza-Borrego country.

Just beyond Torote Canyon the walls of Indian Gorge fall away and Indian Valley is born. Here the traveler enters a different world, set apart from the open desert east of the gorge. The valley is spacious, yet the encircling peaks and ridges have made it a snug harbor where winds are muted and skies are a deeper, blue. Sombrero Peak is close now, smoke trees are thick in the wash, and on the left a low saddle borders the arroyo.

At the far (or west) end of this saddle small rock monuments mark an Indian trail which cuts toward the south. At first the track is faint or nonexistent, and the hiker must look ahead to the next marker to be sure of the route. Soon, though, the trail becomes more distinct. Fragments of pottery dot its course as it passes through a garden of desert plants: creosote, burrobush, encelia, chuparosa, ocotillo, cholla, hedgehog, a few barrel cactus. An elephant tree is conspicuous on a nearby slope.

After a half-mile the trail descends sharply into one of the Anza-Borrego Desert's most attractive oases — Palm Bowl. More than 100 palms fringe the back edge of a natural amphitheater. In a bank at the rear of the oasis a tiny spring provides water for wildlife. Bees were humming around it at the time of my visit, and their droning added to the pleasant drowsiness of early afternoon.

On a previous trip in 1960 I had seen morteros beneath the palms, but could not locate them this time. Evidently fallen trees and fronds, some of which have dropped over rocks, now hide them.

In 1945, the late Randall Henderson counted approximately 122 trees at Palm Bowl. At that time there was no water on the surface. (*Desert*, March 1945.) I did not make a count, but would guess the number to be about the same today.

Draining Palm Bowl is mile-long Surprise Canyon, which courses eastward toward Mountain Palm Springs. It is a canyon of color and peaceful beauty, for along its sandy floor green-topped palms

The palm oasis in North Indian Valley (above) provides a good view of the valley and the open desert beyond. One of the West's strangest plants, the Elephant Tree is actually a shrub. More common in Baja California, one of the few places it grows in the United States is the Anza-Borrego desert area.



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grow against a background of white and russet granite. Traditionally, the desert is looked upon as austere and forbidding, and in some of its moods it is that. Yet when viewed with the eye of love the desert is more often a friendly land. This was its mood in Surprise Canyon and in Palm Bowl when I passed through late in October. A garden-like atmosphere of well-being lay over the country, an atmosphere made up of many parts: the bright colors of land and sky, the balmy warmth, the scarlet blossoms of chuparosa, the activity of birds and insects, the movement of an occasional breeze through the fronds of the trees.

In Surprise Canyon there are approximately 30 palms in three groups. After about one mile the wash empties into the North Fork of Mountain Palm Springs Canyon. In sight to the left (north) from this point is the North Fork grove of palms, while a fraction of a mile to the right is the Anza-Borrego Desert State Park's Mountain Palm Springs Primitive Camp. The camp, which offers pit toilets but no other facilities, can also be reached via a dirt road which leaves County Road S2 one mile south of the Indian Gorge turnoff. There are aboriginal stone circles atop a knoll by the camp, as well as two more palm oases in Mountain Palm Springs Canyon to the west.

On this trip I hiked only as far as the confluence of Surprise Canyon and the North Fork, then retraced my steps to Palm Bowl and Indian Valley. While walking back along Surprise I came upon one more good reason for the canyon's name: just short of the first group of palms a coyote and I spotted one another at the same moment. El coyote—no more than 25 feet away—turned instantly, sped up the steep, rock-walled slope with his mate, and together they disappeared over the rim.

Now back in Indian Valley, I fired up my four-wheel-drive pickup and drove on toward the west. Seven-tenths of a mile beyond the saddle and its old trail leading to Palm Bowl, the road divides. The right branch meanders for nearly three miles into North Indian Valley, while the left fork ends after slightly over three miles in South Indian Valley.

Beyond this junction there is a sharp contrast between the sea-like flatness of the valley and the abruptness of the bordering ridges. It may seem strange to

liken the desert to an ocean, yet in their sweep and power the two have much in common. A desert plain meeting a mountain is not unlike the sea as it touches the mainland. I took the right fork first and was soon winding through good stands of cholla and ocotillo. The late-afternoon sun backlighted the chollas, giving them the look of candles. I reached road's end at the mouth of a narrow canyon guarded by two native palms. Near the trees is a silted-in rock "tank" inscribed with the name of a pioneer ranching family of east San Diego County—the McCains. (Cattle grazed this portion of the Anza-Borrego Desert until only a few years ago.) Off to the northeast I could see parts of the Salton Sea and Chocolate Mountains.

After a brief exploration of the oasis I returned to the junction, this time taking the left branch. Two-tenths of a mile beyond the fork, the road leading into South Indian Valley draws even with a gigantic boulder a few hundred feet to the left. On the near side of this monolith is a smoke-blackened "cave" once used by the Indians. Pottery and chipping waste lie near the opening. On the far side a great splinter of rock ten feet in length broke off at some remote date, furnishing an ideal flat surface for seed grinding. Several Diegueno morteros still dimple this slab today.

Now continuing into South Indian Valley, I found this branch to be similar to its neighbor to the north. The road again ended at the entrance to a rugged canyon. This time, however, there were six palms instead of two. Three were veterans thirty-five to forty feet tall, with trunks up to two and one-half feet in diameter. The others were youngsters not more than seven or eight feet in height. A few more Washingtonias are said to grow upstream.

By this time the shadows were lengthening, and I began the return trip to the paved road, six miles distant. The drive back to the highway furnished a summary-in-reverse of the day's explorations as I crossed Indian Valley, passed the "cave" and the trail to Palm Bowl, skirted the mouth of Torote Canyon, and threaded the gorge. Now this desert world in miniature lay behind, but the memories of its beauty remained, memories which will one day draw me back to the land beyond Indian Gorge. □

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The Sageland Saga

by Mike Engle

ALLEN LUCE, a popular local merchant, had been called upon to make the presentation to I. M. Taylor, the departing superintendent of the St. John Mines. The two men, standing on the stage of the Sageland Opera House faced an appreciative audience of local citizens. As he handed Mr. Taylor the gold watch, which the citizens had donated, Mr. Luce closed his presentation with . . . "and by the successful working of the St. John mine, you have not only made yourself, and the company whom you represent, independent, but you have benefited the community at large, and

have caused, as if by magic, to spring up one of the liveliest and best mining camps to be found in the immense gold regions of California."

Mr. Taylor, with his new gold watch, left the lively community in the spring of 1868. Two years before, a small handful of restless prospectors who had drifted away from Claraville in the Piute mountains, discovered some rich quartz-veins eight or nine miles to the east. A few days later they had formed the New Eldorado Mining District.

Writing of the first lode discovered, a correspondent for the Havilah Weekly

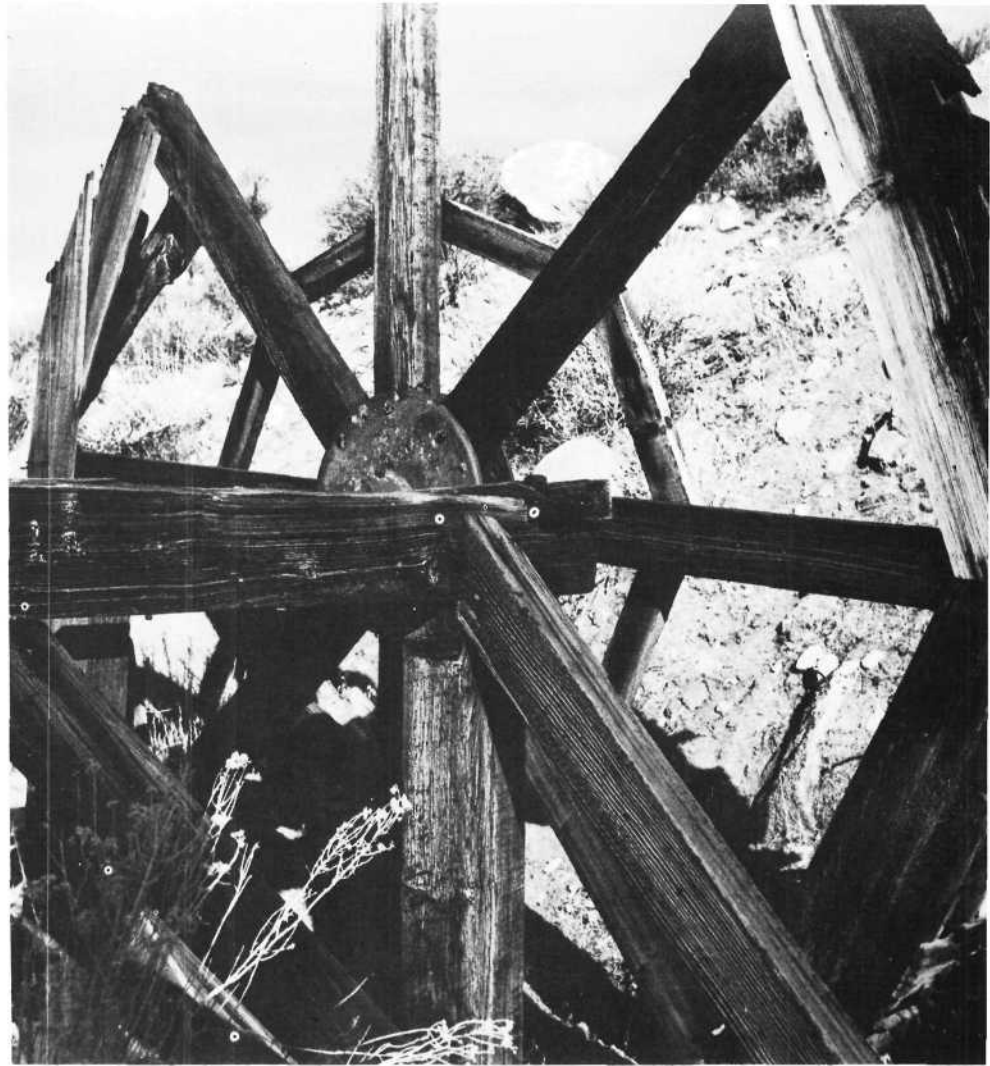


Courier said: "This wonderful vein crops out round a hill for many hundred yards, and in no place is it less than two feet wide, and in many places six feet, of rich rock—rock that will pay not less than \$50.00 per ton in a mill, and that's the kind of rock that smite miners now-a-days."

And smitten they were! As word of the success of this small group spread, many prospectors and miners began to cross the sage-covered hills and enter the hot, sandy washes of the new district. At first a small camp was formed. Groups



An old cabin, (lower left) probably post 1900, still stands on the creek bank south of Shorty's Place. The author's son, Bob, searches for bottles in an old dump (below) on Gold Mountain. Although weathered, the old driving wheel (right) still stands, a reminder of the once booming days of Sageland.



of miners merged into companies and filed their claims. By the end of the year, 30 or 40 lodes had been recorded.

In spite of their early limited resources, two of the companies, with the aid of back-breaking labor and horse-powered arrastras, began to wrest the gold from the rock. The successful operation of miners at these two mines, the St. John and the Burning Moscow, was the single most important factor in the exploding growth of the community. In two years this small camp had become known as the town of Sageland and was

recognized as the flourishing hub of the New Eldorado Mining District.

Today Sageland is little more than a memory. An historical plaque, erected by the Kern County Historical Society in 1968, one hundred years later, marks the site. Easily visible is Shorty's Place, a rapidly decaying building of more recent vintage, standing across the road from the plaque. On a hilltop to the east lay the bare shallow graves of a once proud cemetery ripped open and pilfered by modern vandals. At the spring, a few hundred yards south of Shorty's Place, will be found the rustic remains of an old arrastra. Further south, along the paved road, are the scars of the St. John mines. The Burning Moscow mine can be found along the banks of Kelsoe Creek a little more than three miles west of Shorty's Place.

Today's passenger cars can easily reach Sageland from two directions. Kelso Valley Road, paved all the way to Sageland, travels south from State Highway 178 between Lake Isabella and Onyx. Nineteen and two-tenths miles from the north end of Mojave, Jawbone Canyon Road, most of which is a well graded dirt road,

ambles west from State Highway 14. At the Skyline Ranch in scenic Kelso Valley, the road intersects with Kelso Valley Road. Turn right, or north, here and follow Kelso Valley Road to Sageland which is at the intersection of Piute Mountain Road coming in from the west.

It is doubtful the first prospectors and miners held any thought of a booming town and future historical plaque. Gold and hard work lay ahead of them, and they knew it. In 1866, a letter referring to the Burning Moscow mine states that the miners "... have with their own hands, taken from stump, hewed, split out and whipsawed all the lumber and material to build, on Kelsoe Canyon Creek, what might be termed, a poor man's mill consisting of an overshot wheel twenty-two feet in diameter, and is intended to drive two six-foot arrastras and two stamps for crushing the rock."

In January of 1868, there was an eight stamp mill at the site which was reported ready to begin operation. In a few months, the mine was reported to be averaging 15 tons of rock a day, and was considered by some to be one of the most

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profitable mines in the county. During one run of the mill in May, the Burning Moscow was reported to have yielded \$1300.00 from 52 tons of ore.

Meanwhile, the St. John mines were not idle. The St. John was discovered in the early fall of 1866 by Felix Serra de St. Jean. In a letter dated December 20, 1866, the operation of the St. John is described as follows: "... They have been crushing rock from the vein for some time, by horse power with arrastra and on the 17th inst., cleaned up from two arrastras, after five weeks run, \$800.00.—(They) will use their limited means to best advantage in developing the extent and richness of their mine."

And develop it they did! The St. John Mining Company soon had the financial backing of the well known Nevada mining Senators, Jones and Stewart. Under the aggressive supervision of I. M. Taylor, the company began operating a twelve stamp mill late in 1867. By the spring of 1868, the mill was turning out an average of \$3000.00 to \$5000.00 per week. At this time, the St. John was considered to be one of the richest and most productive quartz mines in California. While under the continuous operation and ownership of Senators Jones and Stewart, the St. John mines produced an estimated sum of \$700,000 for the owners.

By early spring of 1868, Sageland was alive with visitors and workmen. Stores and houses were going up rapidly. Mills were being erected and miners were looking with favor on the entire district. A saloon and billiard room was managed by Weir and Snow. George Bodfish advertised his miner's store which he described as selling: "Every article necessary in a mining community." Nearby, a sawmill was erected to supply lumber to the growing town. Several Havilah merchants were contemplating branch houses at Sageland.

In April, Connelly and Rankin began a twice weekly stage run between Havilah and Sageland. This was followed within a month by A. O. Thomas who commenced a three times weekly service between the two towns. One way fare from Havilah to Sageland was \$6.00, the return trip was another \$5.00.

One of the highlights of 1868 was the opening performance of the Sageland Opera Troupe in April. The troupe symbolized a new era of refinement for the town. In a letter dated April 6, 1868,

which describes much of this opening performance, the writer states that: "A well filled house and an appreciative audience greeted the first appearance of the Troupe. The curtain rose at half past 7 o'clock, when the well known comedy of 'The Irish Tutor' was presented." Following the performance, a gala ball was held for all to enjoy.

By the middle of 1868, the citizens of Sageland could look firmly ahead with hope and satisfaction. The mines were producing at their peak. Henry Denker, owner of the fashionable Bella Union Hotel in Havilah, had arrived in town and opened the new Havilah Hotel. The Opera Troupe was playing to full house audiences, and the gala balls were talked of far and wide. It would seem that the roots of Sageland had burrowed deeply and permanently into the yellow decomposed desert granite.

Few would have guessed that in a few short months Sageland would become another ghostly relic of the past. In the fall of 1868, word of the fabulous discoveries in the White Pine Mining District began to filter into Sageland. Soon the rush was on! Miner after miner packed up his few possessions and started the long journey to the north. One business after another closed their doors.

On June 22, 1869, a correspondent for the Havilah Weekly Courier reported from Sageland: "We paid a brief visit to this once flourishing camp. Its appearance indicates the decline of the mining interest. 'To Let' is placarded on many buildings and from the aspect presented, we judge that the 'White Pine Fever' has left its impress on the place."

The final blow fell in 1875 when Senators Jones and Stewart decided to close the St. John mines. Without the stimulus offered by their capital and the activity at the St. John mines, Sageland could not exist. On March 11, 1876, the Bakersfield Gazette, in a news item that would have best been placed in the obituary column, summed up the demise of Sageland: "Ten or twelve years ago there was a busy flourishing camp at Sageland. On Sundays when the miners gathered in from the surrounding country, it was not unusual to see 800 or 1000 people there. At the present time scarcely a vestige of the old town remains to mark the spot where it once stood, so completely has it passed out of existence." □

Rambling on Rocks

by Glenn and Martha Vargas

MOUNTAINS ARE usually made by enormous forces within the earth pushing up from beneath. These forces may lift large blocks a small bit at a time, or fold rocks into "mountain size" ripples. However the job is accomplished, these internal powers cannot win because there are two other agents waiting outside to tear the mountain down.

Weathering and erosion are often considered to be the same thing, and sometimes they do act together, but they are really separate entities. They are somewhat like the old-time prisoners at the rockpile. Weathering is the inmate with the hammer, breaking large rocks into small pieces. When they are small enough to carry, erosion (the prisoner with the wheelbarrow) hauls them away. Most, if not all, of our prisons have discarded the rockpile as a method of work and exercise, but weathering and erosion are as active today as they ever were.

The most potent weathering agent is freezing and thawing. If water seeps into a crack in a rock, it may freeze. When water freezes, it expands in size, and thus may enlarge the crack. Upon thawing, more water may enter the crack and wait for the next freeze. Large rocks are often split by this section.

Expansion and contraction from heating and cooling is another weathering agent. A block of granite 50 feet in length will gain one-half inch with a temperature rise of 50°F. Certainly, few places have a daily temperature interval this high, but it does happen in the deserts. Most places will vary that much or more from winter to summer. It does not matter how much time it takes, almost any rise in temperature will cause part of a granite boulder to expand and squeeze and crush adjacent grains of the rock. When cooling takes place, the whole

rock contracts, and other particles are squeezed. The results are very small cracks that will allow the entry of water for the freezing and thawing process.

Water acts as a weathering agent in another way. When it is moving in a stream, or as breakers on the seashore, it picks up grains of sand and slings them against large rocks, usually grinding off small chips. Actually, moving water can wear away rock by simply flowing over it, but this is very negligible. At this point we have the sequence in reverse. For flowing water to be an agent of weathering, it first must be an agent of erosion. It must be transporting sand or silt before it can break off more sand or silt. Wind also carries sand and thus falls into this category. In many ways the action of wind and water are nearly identical. If the relative results of the two are compared, however, moving water far outstrips wind in the amount of work it can do.

Both water and wind move sand according to their velocities. If we use water as an example, a slow moving stream can move only silt or fine sand. With a raise in the velocity of flow, it can move larger pieces of sand. If we assume that the velocity is doubled, the moving force becomes four times as great, but now it can move an article 64 times greater in bulk. Each time the velocity is doubled, the same mathematics apply. It is now easy to explain the ex-

Continued on page 46

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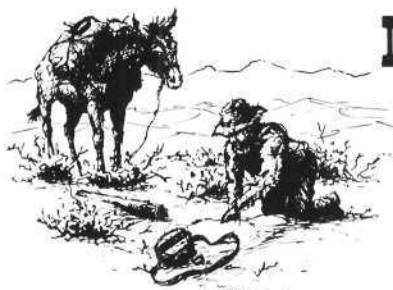
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THE DESERT TRADER

by K. L. Boynton

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BIG OF EAR, soft of fur, bright of eye, *Neotoma*, the woodrat, is one of the desert's most industrious citizens. Known also as the pack or trade rat, he is a builder of stupendous edifices in which to dwell. His work is never finished, for apparently his house—a mound of thorny sticks, mesquite bark, small bark, yucca leaves, cactus and anything else movable and handy—never quite satisfies him. No matter if the pile may be six feet across and even three feet high, his castle must constantly be added to and improved.

Such large scale construction by a little half-pound animal is accomplished by much pattering to and fro on soft pink soled feet; a fetching and carrying and arranging and rearranging that requires countless rat hours of hard, hard work. *Neotoma* is at his toil throughout much of the night, when many another desert dweller is fast asleep.

House building also requires barter and exchange, and business deals of all sorts, for this whiskered entrepreneur has an eye for beauty, particularly anything shiny. But he is a sincerely honest trader withal, and if a tin cup from a camp is needed to add a touch to his house, that chip of dried coyote dung he leaves in its place is, according to his lights, a fair enough deal.

In spite of what the recipient may feel the next morning when regarding this exchange merchandise, *Neotoma* is by no means a rat. In fact, he is not even related to that tough coated, scaly tailed, beady eyed, sloppy character from the Old World—the house rat, nor to that miniature hippy, the house mouse. The woodrat is native to North America, and belongs to an entirely different family, also graced by such outdoor fellows as the muskrat, the meadow vole and various dainty species of deer mice.

Neotoma is about four to seven inches long in the body. His tail, which is as long as his body is lightly furred, and so are his big ears—quite unlike the bare tail and small bare ears of the house rat. Attired in his desert tones of greyish-buff and sand, with his spotless white cravat and vest, he is a clean little animal, and never a piggish eater. Busy as he is, he is also given to watching human proceedings about a camp with large inquiring eyes. Safe in the shadows just beyond the firelight, he may even edge closer to see better, sitting up with his hands held on his

breast, and his tail arched squirrel-like over his back.

On the face of it, it may look as though this bucktoothed architect, who expends so much labor dragging material, sometimes twice his length, to an already out-sized pile of debris, can be nothing less than desert-demented. But the fact of the matter is that his industry and skill in building play a very large part in his being able to inhabit starkly inhospitable environments otherwise closed to him. And the work of several scientists inquiring into his affairs goes to prove it.

Schmidt-Nielsen, Bartholomew and others investigating the woodrat's physiology have found to their surprise this very successful desert dweller does not have the specific adaptations for hot, dry living that many other desert rodents have. He cannot, for example, survive on dry seeds without water as can the kangaroo rat, who has both fancy machinery for making moisture metabolically out of the driest of food, and also special kidney adaptations for conserving it. Being without such aids, *Neotoma* has to have a surprising amount of water. Furthermore, he cannot stand such high heat as can the striped ground squirrel, who lets its temperature soar and still goes merrily about even on a hot day.

Shortchanged, as he is, *Neotoma* still has a few advantages in his favor. For

one thing, he has a very slow metabolism for his size. In his normal operating temperature range, he uses up less energy, and hence cuts down on water loss. Also, he can stand some heat, and if the air temperature does not get any higher than about 91 degrees F., he can postpone his need for evaporative cooling by allowing his body temperature to rise. And to be sure, since he has so little hair on his big ears and tail, and soles of his feet are bare, heat can be unloaded in all these places by blood vessels swelling and bringing deep body heat to the surface.

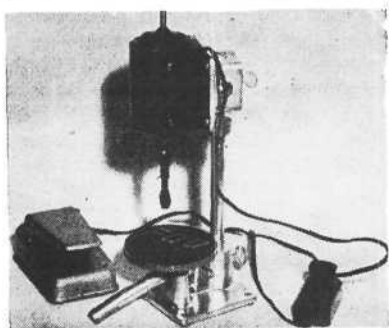
As a last resort, when his temperature approaches the lethal 104° F he drools, spreading the moisture over his fur for evaporative cooling, but this heavy water loss he can ill afford and will die unless he gets to a cooler place promptly to bring his temperature down.

Needing so much water and living where there is little chance of finding any, woodrats depend on the vegetation they eat for moisture. Zoologist Lee, noting that different desert locations had different types of vegetation, determined to see how the local woodrats in each case got along on what they had to eat. His recent study, fast becoming a classic, involved three populations of woodrats from two different kinds of desert habitats: one, from the dry and hot coastal region where prickly pear and cholla are abundant; and two, from the cactus-scarce

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The little woodrat will make his home where he thinks there is safety—such as in the engine of this abandoned automobile.

Mojave section, also dry and hot, but where creosote bushes and Joshua trees predominate.

He collected samples of the vegetation in each habitat, oven-dried them at 230° F. and was able to make a fairly close estimate of water content. Cholla has about 82% water, and prickly pear 88%, and so the coastal woodrats living where these plants are plentiful have a source of water, but how do they get it? Everybody knows that cacti have developed some mighty good defense mechanisms over the ages that discourage would-be browsers, and the *Opuntia* kind, to which both prickly pear and cholla belong, are particularly inhospitable. While the woodrats prefer prickly pear, even the dreaded cholla is eaten with relish, and Lee saw how they accomplish this feat in the midst of such spiny odds.

It seems that the most efficient ones carefully make a first incision in the cactus at the edge of a joint. Munching the juicy pulp, they eat along until they come near an areola, a cluster of sharp barbed spines enhanced by the addition of bundles of tiny silica needles, so fine as to be almost invisible. Here they carefully gnaw around and under the spiny clump, cutting it loose deep at the base and dropping it off out of the way. This leaves the way clear for more eating until the next areola is reached.

Unbelievably adept and agile, woodrats can climb about these bristling cactus water carriers without getting the wickedly barbed and burning needles in their soft bare feet. They somehow even lug the loosened spiny clumps home, where, added to the piled debris, particularly around the entrance, they tend to discour-

age coyotes, bobcats and ringtails calling at the dinner hour.

As he suspected, Lee found that woodrats living in the Mojave where cactus is scarce have a much harder time, for the creosote bushes and Joshua trees they eat have only 61% water content at best, and even this percentage drops in the summer heat and strong drying winds of this section of the desert.

What is it then that these Mojave woodrats have that enable them to flourish under these tougher conditions?

A better house? The coastal bunch make less elaborate structures. Theirs are mainly in and around cactus, but even inside these fairly open houses the temperature was shown by Vorhies to be cooler than the outside air at the entrance.

In contrast, Lee found, the Mojave woodrat house is carefully piled up either around rocks, or under fallen Joshua trees. Now a woodrat is not a good digger but he still provides a shallow bowl-like depression in the soil excavated before the towering superstructure is piled on top. This basement will hold his nest, a bed-chamber consisting of a hollow ball about 10 inches in diameter, of soft warm material—shredded bark, grasses, stems, etc.—woven together with a single opening in the side just big enough for him to squeeze through. On top of this, the superstructure is erected piece by piece, the pile taking on a roughly cylindrical shape or conforming to the rocks or tree trunk around which it is built.

The woodrat dwells in this abode strictly by himself, marking it with his scent, and being extremely rude to would-be visitors of his own kind. Socializing is

limited to meetings at foraging places, except during the matrimonial season, at which time he moves into Mrs. Woodrat's house, only to be flung out permanently at the end of a very short honeymoon.

In Mrs. Woodrat's house, the two to four youngsters who eventually make their bow to the world are born naked and blind. Each one promptly takes his place at the table and secures a good hold from which he has to be forcibly removed when his mother wishes to leave the nest. Interestingly enough, when the youngsters' front teeth erupt, they are oddly spaced apart at first, which actually facilitates a much closer grip. This togetherness during the next critical three weeks allows the departure of the family en masse should the mother have to flee, for the young, hanging on tight, are simply dragged along with her.

Clinging behavior, so very highly developed in the woodrat, is cause for considerable scientific argument. Is this really a good adaptation? Some say it is bad for the species, since the mother, clumsy with her dragging burden, is slowed down and hence more liable to be caught. Others point out that the young could

never escape by themselves, and that in this way the chances are excellent that the whole family will make it. Anyhow, since the desert is so well equipped with these white-vested little charmers, in spite of their low family numbers, something is certainly paying off.

Or maybe a whole series of somethings, Lee concluded after much pondering. For while the desert woodrat may not have anything astounding in the way of physiological adaptations, he has some that are measurable. These minor adjustments, plus the fact that he conducts his business affairs at night when the desert is cooler, plus his diet which has reasonably moist vegetation, carry him a long way. But probably the deciding factor is his house.

A house that so well fulfills the needs of its occupant is indeed a credit to its builder. And, as anyone can plainly see, is also well worth decorating with objets d'art, such as beer cans, pebbles, sheep chips or fruit jar tops. If its big-eared, bright-eyed architect also desires that boot to drape on top as a crowning touch of beauty, who is to deny him? Particularly when he is honest and brings such fine goods in return. ☐



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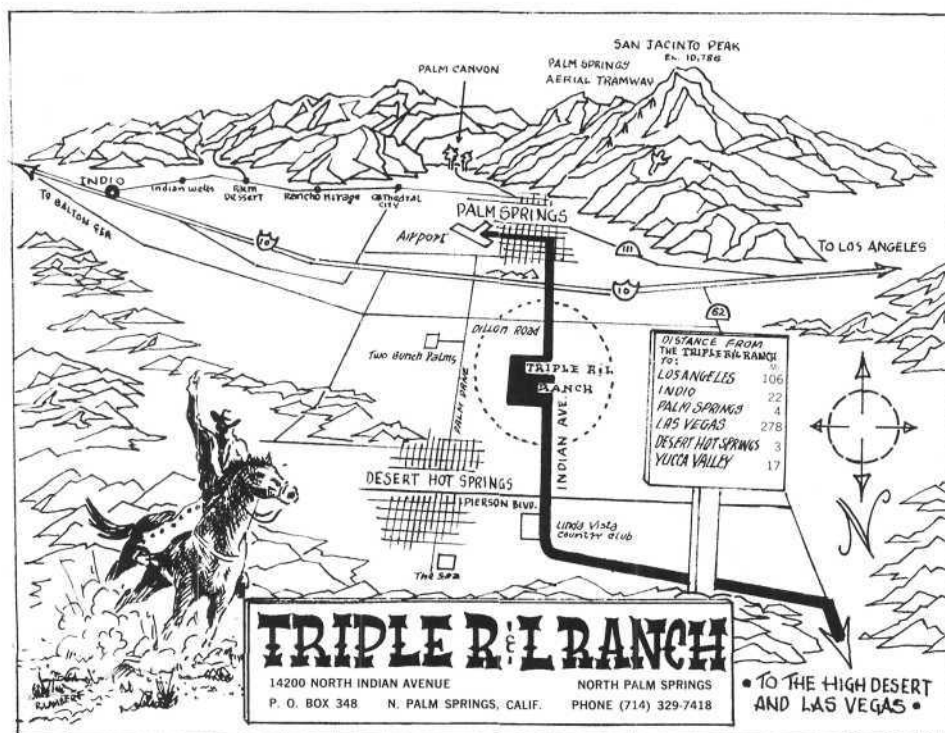
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A graphic example of how giant boulders are broken by weathering.

RAMBLING ON ROCKS

Continued from Page 41

tremely large boulders frequently seen in the beds of small streams. The runoff from cloudbursts has been observed to move boulders nearly the size of a house. When such large rocks (as well as the small ones) are rolling down a stream, they are being eroded by the water, but

at the same time they are weathering other rocks.

Even plants and animals get into the act. Geologists attribute the width of the Grand Canyon of the Colorado River to the action of plants along the rim. Shrubs and trees send their roots down into the soft rock that makes up the rim of the canyon. In so doing, they split off pieces that tumble toward the bottom. The plants are weathering agents, gravity is the agent of erosion, and if the rock reaches the river, the flowing water story begins anew. It has been stated that if it were not for the larger plants along the rim, the Grand Canyon would be less than one-half of its present width. The river would have cut only a deep narrow gorge as it has done in some other places.

The ordinary pocket gopher is credited with part of the fertility of the San Joaquin-Sacramento Valleys of California. These animals live in the foothills and median levels of the Sierra Nevada Mountains. Part of the activities of these animals (as every western gardener knows) is to make extensive subterranean

burrows. Excess dirt is pushed out in mounds at the entrances to these burrows. Here is a finely pulverized dirt that can easily be moved down the mountains by ordinary runoff from rain or melting snow. It is claimed this activity by gophers over many hundreds of years has helped to enrich the great valley below. Gardeners please note: gophers are good for something!

The farmer tilling hillside land is a weathering agent. If he is not a careful farmer, erosion takes his land away. Man has found that he can easily accelerate erosion, but he cannot stop it.

Weathering sometimes shows some very interesting results. One is known as concentric weathering. Freezing and thawing, expansion and contraction, acting separately or combined, tend to affect only the first few inches of any rock. If there is a corner, or if some portion projects above the general surface, the action of weathering will tend to remove it. This takes place because weathering acts to a nearly equal depth below all surfaces, with the zone of weathering tending to meet below the point of the projection. The final result of this action is a nearly spherical rock as in the illustration. In most cases, this action will remove thin sheets as shown. The sheet is the approximate depth of the zone of weathering, and is the portion of the mass that was most violently weathered. This violent action tends to lift this portion off of the greater mass. Concentric weathering sometimes results in what is called sculpturing, and certainly the domes of Yosemite Valley in California can be called objects of art.

Slowly, mountains and hills are being leveled. In some regions the rate is hardly perceptible in a human lifetime. In others, many inches are removed in a single storm. Weathering and erosion are a boon to some, and a catastrophe to others. Mineral collectors have found erosion to be of great assistance. If it were not for this action, few minerals would be available to us. Nearly all minerals are formed deep beneath the surface by some of the same agents that made the mountains.

As described in one of our past columns, petrified wood is formed while deeply buried in either silt or volcanic ash. After minerals are formed, they must lie locked beneath the surface until our tireless laborers, weathering and erosion, can dig them out for us. □

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Calendar of Western Events

This column is a public service and there is no charge for listing your event or meeting—so take advantage of the space by send-in your announcement. However, we must receive the information at least three months prior to the event. Be certain to furnish complete details.

NOVEMBER 25-30, ROCKHOUND ROUND-UP sponsored by San Diego Councils, Gold Rock Ranch, Ogilby Road off Route 8, 14 miles west of Yuma. Camping, field trips, gold panning, swap table, auctions—all free. Write Box 2132, San Diego, Calif. 92112.

DECEMBER 12-13, RED CARPET GEM AND MINERAL SHOW hosted by the Culver City Rock and Mineral Club, Northrop Recreation Gem & Mineral Club, Santa Monica Gemological Society, Southern California Oriental Rock Club and Southwest Mineralogists. Santa Monica Civic Auditorium, 1855 Main St., Santa Monica, Calif. Write Jim Cook, 1328 15th St., Santa Monica.

JANUARY 18, INTERNATIONAL EXHIBITION OF NATURE PHOTOGRAPHY. Chicago, Illinois. Deadline January 18. For information on entries write Nature Camera Club, 407 Eugenie St., Chicago, Ill. 60614.

JANUARY 31-FEBRUARY 8, FESTIVAL OF ARTS, Tubac, Arizona. Sponsored by the Santa Cruz Valley Art Association. Paintings, crafts and other exhibits. Admission free.

FEBRUARY 12-21, NATIONAL DATE FESTIVAL of Riverside County, Indio, California. This is the 25th year of the world-famous event with industrial, recreational, agricultural exhibits plus spectacular displays and pageants, including Sultan's Court and Queen Scheherazade and her Court of Beauty. For information write: Indio Chamber of Commerce, Indio, California 92201.

FEBRUARY 20-21, SAN FERNANDO VALLEY GEM FAIR 1971 sponsored by the San Fernando Valley Gem Fair Association, Devonshire Downs, 18000 Devonshire St., Northridge, San Fernando Valley, Calif.

FEBRUARY 27 & 28, BOTTLE SHOW AND SALE sponsored by the Antique Bottle Club of Orange County. Retail Clerk's Union Hall, 8530 Stanton, Buena Park, Calif.

Desert Life

by Hans Baerwald

To shoot this striking photograph of a praying mantis, Hans Baerwald placed plate glass next to the mantis who then used the glass as a prop to climb into the upright position. His left leg is leaning against the glass. Exacta 35mm camera with 50mm lens and multiple bounce flash.



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Letters to the Editor

Letters requesting answers must include stamped self-addressed envelope.



Beale's Cut . . .

I enjoyed the article *Along the Butterfield Trail* by Robert Likes in the October, '70 issue. I also read *The Colorful Overland Stage* by Richard Pourade with 20 paintings by Marjorie Reed. It is a beautiful book. The painting "Holdup in Fremont Pass" looked familiar so I dug through my past issues and sure enough, in the March, '69 issue is an article by Charles Grizzle and a photograph of Beale's Cut, which is the same as the painting. It is the Fremont Pass and the opening is Beale's Cut.

L. L. PONATH,
Hinkley, California.

Good Neighbor Policy . . .

Reference is made to Helen Walker's *Vasquez Rocks* in the September, '70 issue in which she placed this site within "its strategic location in Antelope Valley . . ."

Antelope Valley is blessed with legions of enthusiastic boosters. This leads to outstanding accomplishments such as a five-day fair gating over 140,000, the largest Flea Market in the West and, to thrill the hearts of the Women's Lib movement, the world's only girl hayloader in active competition.

It also sometimes leads to the stretching of our boundaries—say to Boron and Gorman. However, and to the best of my knowledge, we have yet to stretch our boundaries to include the vaunted Vasquez Rocks. In fact, to reach them from the Valley we have to pull up and over a sizeable chain of mountains.

Considering the size and weight of the Rocks and our interest in maintaining good relations with our neighbors to the South, I believe we should leave them—as they have rested for the past "25 to 50 million years"—at Agua Dulce.

CHARLES T. MARTIN,
Lancaster, California.

Editor's Note: Author Walker was speaking geologically rather than geographically. However, we salute Reader Martin's magnanimousness. We certainly had no intentions of alienating his good neighbors to the South. From what we read about the fast growing Antelope Valley, the residents have enough on their hands. We only hope they don't pave the entire area and will leave a few fields for our California poppies.

Rambling on Rocks . . .

I just read the column by Glenn and Martha Vargas on petrified wood and was interested in the conclusions. I have experimented and was impregnating wood under vacuum and then pressure and find that the texture changes completely. The wood then turns off in curls like steel. I used a vinyl paint, clear type.

Maybe if you could put wood under high pressure and then bake it for a week at 400 to 500 degrees using silicate of soda (water glass) or a saturated solution of any water soluble chemical, I wonder what would come out to prove your theory? I look forward to your next article.

FRED GIBBONS,
Seattle, Wash.

Glenn Vargas' Answer: Reader Gibbons has been having fun! Evidently he has done a good job of infiltrating wood. If he put his results on a lathe, turned it and got "curls" like steel, we can only assume that the vinyl paint (which is really a plastic) was behaving much like any other plastic on a lathe. The vinyl, combined with the wood, should do just as he says.

His ideas concerning baking dry wood for a week with some water soluble chemical is very intriguing. We wonder what would come out too, but don't have the equipment. Also, Martha says I cannot have the oven for that length of time!

More Rambling on Rocks . . .

About four years ago we dug out part of an opalized wood log about 20 inches in diameter—part was petrified, part was opalized and a small part was soft and fluffy like cotton. Could you please tell me how a log can transform into stone? There is no evidence of heat and it was only five feet underground. The log was laying on the same slant as the

mountainside. The rain falls mostly in the winter when the ground is frozen and the ground is very hard so it would take a long time for water to reach it. Hope you can give me a satisfactory answer.

J. W. OLSON,

Glenn Vargas' answer: Reader Olson has come upon an interesting find. The portion which he says is petrified, is no doubt unaltered material. The part he calls opalized, is partially weathered and thus not as hard as the unaltered portion. The part he describes as soft and fluffy has weathered to the point where all original wood is gone, leaving the thin strands of opal as we described in the October '70 column.

It appears that Mr. Olson has missed the fact that the wood first had to be buried deeply, and then petrified. See our August '70 column. Weathering and erosion, as discussed in our column in this issue, have removed the covering layer of rock down to five feet where he found his log.

Mother Lode . . .

To me your September, '70 issue is your finest. I am especially pleased with the Mother Lode part if it. From 1908 to my retirement in 1943 I have worked for a number of years in the Mother Lode.

In my opinion, Volcano is the finest example and most interesting of any of the old towns and your picture description of it is exceedingly fine.

I have been a subscriber to *Desert* since just before the start of World War II and couldn't get along without it, and for many years have been a gift subscriber for four other persons.

HORACE B. WANZER,
Jackson, California.

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